

The United States MILLER

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THE SHELBY (OHIO) MILLS.

The "Shelby Mill Co." is the outgrowth of the original firm of Fish, Storer & Davis, which began business in Shelby early in 1876. This firm did a very successful business in its "Shelby Junction Mills," having a daily capacity of about 225 barrels of flour. There, under the burr system, they produced a flour not surpassed by any mill in the State, until the advent of the rolls on winter wheat. Their goods found ready sale in New York, Pennsylvania, and New Jersey, being especially noted for strength and uniformity. After the death of Baker Davis, the remaining partners continued the business under the firm name of Fish & Storer, that being the style of name from 1880 until the formation of the present company, incorporated in May, 1882, and which succeeded to the business in the following July.

The officers of the company are C. F. Fish, President, D. W. Storer, Vice-President and General Manager, and M. H. Davis, Secretary and Treasurer. These gentlemen, being fully aware of the great advancement in ideas as to the many valuable improvements in milling machinery that have been made manifest in the past few years, determined, with their characteristic energy, to push at once to the front among the advocates of better goods obtained through the medium of roller mills and scientific milling. Accordingly they made a thorough examination of the different systems, and after visiting a large number of mills, and a careful comparison of the quality of work and quantity of yield, they decided to adopt the Odell System, and entrust the planning and arranging of their mill, including the planning of the building, to Mr. U. H. Odell, milling engineer for the Stilwell & Bierce Manufacturing Co., of Dayton, Ohio. They at once procured a favorable location adjacent to their grain elevators, located on the C. C. C. & I. R'y, about a mile from their old mill, and near the business centre of the town. There, in July, 1882, they began the erection of their present imposing structure, built according to plans furnished by Mr. Odell. Work on the building was completed by October first, and it is probably the most perfect of its kind in the State, if indeed it is excelled by any mill building in the country in point of solidity and strength, and adaptation to what is required of it. Over one hundred car loads of stone and one million of brick were required in the construction of its walls. The building stands five stories high, each of which is from fourteen to sixteen feet in the clear, except the fifth story, which is eighteen feet. The main structure is about seventy feet square, and the engine and boiler room additions are together about forty by fifty feet. The smoke-stack contains nearly one hundred thousand bricks and is one hundred feet high. Power is furnished by a two hundred horse-power Harris-Corliss engine, supplied by a battery of three sixteen foot boilers, set according to plans of J. F. Randall, M. E., of Warren, Ohio.

The mill, which began making flour shortly before the first of March, last, is under the supervision of Mr. Thomas H. Sopher, with an ample corps of assistants. It is running day and night and has a daily capacity of about 400 to 450 barrels. The company makes its own barrels, and its shops and store houses are convenient to the mill. About fifty men in all are given employment by this company at its mills, elevators and cooper shops.

The first story, or basement, contains one Barnard & Leas' separator, one Morgan wheat polisher, one "Victor" brush, one wheat bin

for 5,000 bushels and elevator boots, and shafting to drive rolls.

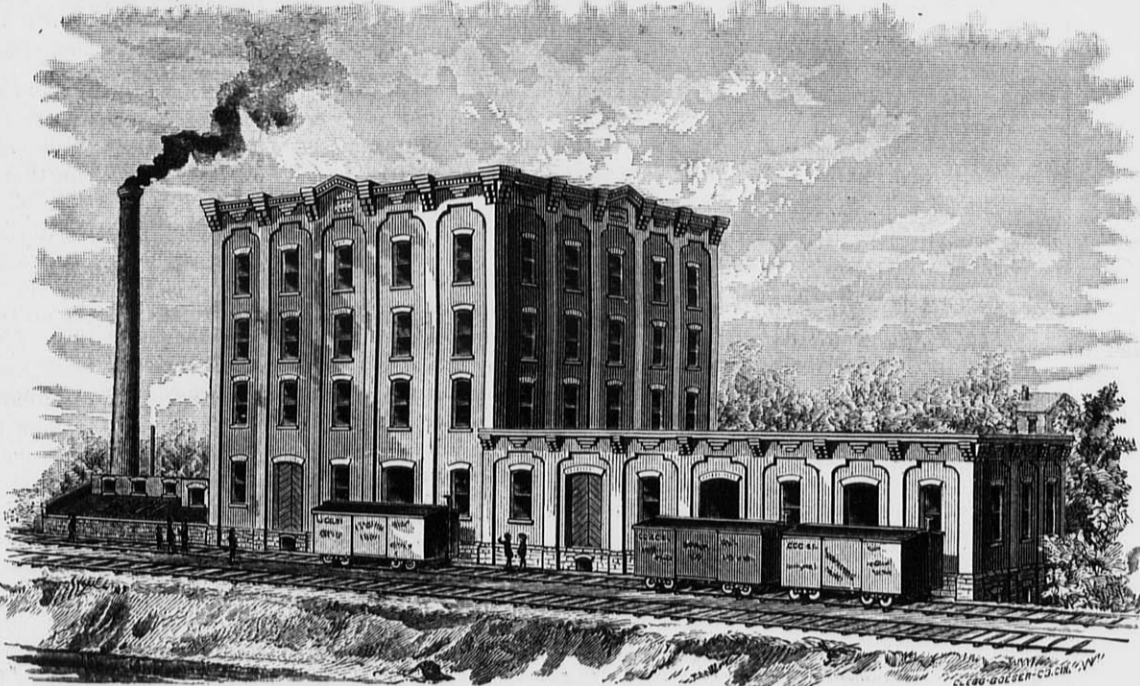
Second floor has twenty-two double sets of Odell roller mills with combined and simultaneous belt tighteners, and all the valuable adjustments peculiar to this roll, also two run of forty-two inch stone and four Matteson flour packers.

Third floor has eighteen reels, eight Geo. T. Smith purifiers, two C. N. Smith aspirators, flour bins, shafting to drive purifiers, wheat bins, bran and shorts bins.

Fourth floor same as third.

Fifth floor has four reels, two Martin centrifugal reels, three excelsior bran dusters, grading sieves for grading middlings for purifiers, dust rooms, gearing to drive bolting chests and elevator heads.

All of the above machinery, except the rolls, was furnished by the Richmond City Mill Works, of Richmond, Ind., who also did the millwright work.



THE SHELBY MILLS, SHELBY, OHIO.

The mill is very perfect in all its details, and the flour is unsurpassed.

The entire contract for this work was taken by the Stilwell & Bierce Manufacturing Co., of Dayton, Ohio, and executed promptly and satisfactorily.

The mill worked satisfactorily from the start, and not a single cloth was changed.

INCIDENTS IN A PHILOSOPHER'S BOYHOOD.

Prof. Joseph Henry, one of the most eminent of American scientists, died May 13, 1878. On Thursday, the 19th of April, his memory was honored by the unveiling at Washington of a magnificent bronze statue, made by W. M. Story, and costing \$15,000.

Among the interesting reminiscences of his boyhood is the story of his first pair of boots—a true story, often told by himself in later years.

When he was a boy, it was the universal custom to have boots made to order, and his grandmother, with whom he was living, indulgently allowed him to choose a style for himself. There was no great variety of styles. Indeed, the choice was limited to the question of round toes or square toes. Day after day Joseph went to the cobbler's and talked over the matter without coming to a decision, and this even after their manufacture was begun, until at last the shoemaker, fairly out of patience, took the decision into his own hands and made a most remarkable pair of boots—one boot round toed, the other square toed.

Later in life Prof. Henry often came deliberately to his decisions, with the advantage that he seldom, if ever, had occasion to abandon them.

While Joseph was a schoolboy he acquired a taste for reading in this peculiar way: One day he chased a pet rabbit through an opening in the foundation wall of the village meeting-house. While crawling about among dirt and rubbish a gleam of light enticed him through the broken floor, and he found himself in a room containing the open book-case of the town library. The title of one of the books struck his fancy and he took it down. It was Brooks' "Fool of Quality," and he read, again and again coming through the hole in the floor, until access by the door was finally granted him. From this first book that he ever read with a relish, he passed on eagerly to other works of fiction in that library.

A few years later, in a way almost equally accidental, his mind was turned to an entirely different class of reading.

Confined at home by a temporary illness, he took up a book casually left on the table by a boarder, and entitled: "Lectures on

Joseph Henry, and regard education as not completed, but just begun.—C. P. Osborne in the Scientific American.

THE WISCONSIN LEGISLATURE AND GRAIN GAMBLING.

The Legislature did an unwise thing in modifying the law relating to contracts for future delivery. The courts have in this and other States treated many of these transactions in grain speculation, where millions of bushels of grain or other merchandise have been nominally bought and sold, in many times the quantity capable of delivery, as merely in intent, or in fact, a wager upon the future price; the buyer paying the difference if the price rose, the seller paying the difference if it had fallen at the time of delivery below the stipulated price. The courts have looked through the forms of these contracts to their actual purpose and intent, and have gone outside the mere terms of the agreements

and admitted extrinsic evidence to show the real nature of the transaction. The decisions created a great murmuring among the men who profit by this kind of dealing, and they have wrestled with the judiciary in vain to have the system of speculation which enriched them legalized. But as the course of judicial decisions settled the law against them, and would not consider this speculation in "futures" as legal, but as simply a form of gambling, they have had recourse to the legislature; and the act which has passed and become a law is so framed as to undo all the courts have done in breaking up the system of gambling, more tempting to dishonesty, more alluring than the faro bank, or any or every form of gambling with cards or dice. Nearly all the defalcations and embezzlements chronicled by the tell-tale press—and every day brings its instances—are the results of speculation or gambling in stocks or grain or cotton. Fame and fortune and honor are daily wrecked. Bankers, trustees, cashiers, officials are lured into this fascinating speculation, oftener than otherwise to find that they have not gained but lost—lost their money; the money of others confided to them, their honor and all their standing among men. The Legislature made a grave mistake in so changing the law as to encourage this gigantic system of gambling, and take away the beneficial restraints the court were interposing to shield the foolish from the sharper and to deter men from ruin.—Madison Democrat.

A DINNER THAT WILL BE SERVED FOR SEVENTEEN UNTIL SIXTEEN DIE.—A novel banquet took place at the Hotel Bellevue. It was the third annual dinner of the Last Man's Club, formed three years ago. It has seventeen members. Each member must attend the dinner annually. Death, serious illness or separation by great distance alone excuses. At every dinner a place is kept for each absent member, whether living or dead, and dishes and wine are served opposite their empty chairs, the same as if they were present. A curious and elegant tankard of beaten silver, filled with wine, is passed around the table and quaffed by each one present until emptied. As each member dies his name will be engraved on the tankard until finally the last man, surrounded by the overflowing plates, the full glasses and the empty chairs, will drink to their memory alone. Then the dinners will cease and the tankard will become the last man's property.

Stilwell & Bierce Mfg. Co., have orders for Odell rolls for the mills of Frederick Doehler, Village Creek, Iowa.

Experimental Philosophy, Astronomy, and Chemistry, intended chiefly for the Use of Young Persons. By G. Gregory." It began with a few questions: "You throw a stone, or shoot an arrow into the air; why does it not go forward in the line or direction that you give it? . . . Why does flame or smoke always mount upward, though no force is used to send them in that direction? And why should not the flame of a candle drop toward the floor when you reverse it or hold it downward? . . . Again, you look into a clear well of water and see your own face and figure, as if painted there. Why is this? You are told that it is done by the reflection of light? But what is the reflection of light?"

The trifling incident of taking up this book may be said to have turned the whole course of this lad's life.

After his death this book was found in Professor Henry's library with the following entry upon the fly-leaf, written in his own hand: "This book, although by no means a profound work, has, under Providence, exerted a remarkable influence upon my life. It accidentally fell into my hands when I was about sixteen years old, and was the first work I ever read with attention. It opened to me a new world of thought and enjoyment; invested things before almost unnoticed with the highest interest; fixed my mind on the study of nature, and caused me to resolve at the time of reading it, that I would immediately commence to devote my life to the acquisition of knowledge."

Many young men quit school at sixteen years of age. They should take a lesson from

UNITED STATES MILLER.

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MILWAUKEE, MAY, 1883.

ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

ATTENTION FLOUR MILL OWNERS.

We desire all flour-mill owners to write to us, giving us their correct address, with post-office, county and state. Please state also capacity of mill in barrels per day of 24 hours, what kind of power is used, and whether stones or rollers or both stones and rollers are used. Your compliance with above request will confer a benefit not only on us and the mill-furnishers and flour dealers, but on yourself. Address as early as convenient,

E. HARRISON CAWKER,

Pub. of Cawker's American Flour Mill Directory,
 116 & 118 Grand Ave.,
 Milwaukee, Wis.

MILLERS' NATIONAL ASSOCIATION.

The Millers' National Association will hold their annual convention at the Grand Pacific Hotel, in Chicago, June 26, 1883. President George Bain will have returned from his European trip by that time and will be on hand to greet the members. We hope that the attendance will be large. Matters of great importance to all millers will be discussed and acted upon. All members of the Association are expected to be present, and millers who are not members will do well to be on hand and become members. The terms of admission are very liberal. Let there be a regular old fashioned, rousing convention.

ANOTHER EVENT FOR THE SOUTH.

Augusta, Ga., is to have a full fledged 300 barrel gradual reduction mill. Miller & Co., proprietors. These gentlemen are among the foremost of the millers of the South and have given much study to the investigation of the different machines and systems now claiming the attention of millers. When they announced their purpose of changing over to a roller system they were regarded as of so much importance by the mill furnishers that the most of the large houses sent their representatives down to Augusta at once to secure their order. The contract was, however, accorded to the Case Mfg. Co., Columbus, O., who, by the way, did not send their man in person, but it was awarded to them by correspondence, giving evidence of the faith Messrs. Miller & Co. had in their line of machines and the Case firm.

CALIFORNIA FLOURING TRADE.

Though early dependent on foreign countries for her supplies of breadstuffs, and importing liberally from both North and South America, California has long since become one of the granaries of the earth. She raised enough wheat in 1880 to feed a population eight or nine times her size. The fertile valleys of the interior and the sea coast are practically inexhaustible, and will in days to come form another Egypt. They can supply with breadstuffs a population double that of all English speaking North America. It will be thus seen that flouring in California is but an infantile industry, no matter how comparatively gigantic it may appear to have grown to-day. That it is bound to be great and overshadowing, who can doubt. There are numerous markets all over the world to which our breadstuffs can be shipped, that do not possess the milling facilities that we do,

and to these it will be necessary to send flour instead of wheat. The following table gives the total of exports of flour since we became exporters:

EXPORTS OF FLOUR:

Year.	Bbls.	Value.
1854.....	58,115	\$ 523,035
1855.....	115,716	925,628
1856.....	77,260	588,080
1857.....	9,005	90,050
1858.....	16,330	177,630
1859.....	24,274	164,282
1860.....	114,936	590,763
1861.....	170,563	894,462
1862.....	105,242	654,412
1863.....	163,783	846,958
1864.....	122,462	845,546
1865.....	150,010	713,721
1866.....	310,321	1,816,790
1867.....	274,462	1,595,649
1868.....	340,766	2,291,734
1869.....	403,116	1,968,134
1870.....	239,735	1,204,066
1871.....	233,591	1,520,500
1872.....	248,172	1,315,000
1873.....	444,465	2,744,859
1874.....	493,901	2,765,180
1875.....	483,944	2,466,168
1876.....	470,359	2,436,543
1877.....	434,129	2,367,493
1878.....	498,465	2,673,677
1879.....	510,948	2,573,657
1880.....	548,761	2,727,647
1881.....	791,232	3,555,939
1882.....	966,492	4,845,296

During the present year the figures have been as follows:

	Bbls.	Value.
January.....	117,198	\$561,432 25
February.....	74,540	392,543 00
March.....	105,878	566,985 00

Total, first three months 297,616 \$1,521,010 25

We have thus made a very good beginning. If the rest of the year is as this we would ship nearly a million and a quarter barrels of flour.

The following table of shipments in 1882 will make the destination of our exports better understood:

Countries.	Bbls.	Value.
England.....	390,617	\$1,977,680
China.....	233,517	1,137,580
Ireland.....	141,232	714,320
Central America.....	87,645	457,205
Hawaiian Islands.....	27,356	139,755
Australia.....	23,134	101,908
Panama.....	15,932	82,115
Japan.....	19,382	58,084
Tahiti.....	9,576	49,964
Asiatic Russia.....	5,543	26,699
Saigon.....	5,500	23,775
British Columbia.....	4,795	22,781
Africa.....	4,500	22,560
Mexico.....	2,260	11,734
Belgium.....	2,000	10,000
United States of Columbia.....	1,037	5,202
Peru.....	463	2,347
Apia.....	333	1,932
Philippine Islands.....	225	1,337
New York.....	202	1,022
Brazil.....	73	420
New Zealand.....	50	265
Mangareva.....	42	267
Fiji.....	14	94
Botham Island.....	9	50
Java.....	5	50
Sydney Island.....	5	50

Total..... 966,492 \$3,845,296
 —San Francisco Journal of Commerce.

FLOUR AND GRAIN TRADE NOTES.

Dunlop Bros., of Glasgow, Scotland, write under date of April 18, as follows:

Business has been quiet throughout the week; but there is a better feeling in the trade, and some transactions have been effected at the low range of prices now current. Supplies of flour continue heavy, while moderate of wheat, maize and other articles.

To-day's market was rather thinly attended. Tone steadier all round; and wheat and flour are fairly firm at late rates, with more enquiry. Maize also is in improved demand, and 3d. per boll dearer since last Wednesday. Barley, oats and beans firm, but unaltered in value. Weather mild and damp.

Harris Bros. & Co., of London, under date of April 12, write as follows:

We have cold, frosty nights, with hot sun by day, and the growing wheat crops are not well spoken of, and much want warm rains; we have had a very fine spring seed-time, never better, and nice rains would soon bring away a splendid braid of oats, barley, &c. We have had only moderate supplies from our own farmers, but foreign arrivals have been ample since our last, with plenty more of everything close at hand and following on, now that Odessa and Nicolaief are open, as well as all Danube ports, and the Sea of Azoff. Wheat, since our last, has lost value, though there has been a very fair demand generally; the chief decline has been in C. F. & I. things, nice Ghirka off coast down to 41s. 6d., red winter to 43s., No. 1 Californian to about 44s. 6d., and other sorts in proportion; the trade in the near future seems to depend a good deal on the weather, and the ability of weaker holders to finance their cargoes as they come along. Flour quiet, and stocks do not decrease as fast as we should like to see them; we find a fair trade for good strong sorts day by day, but anything not quite up to the mark hangs fire. Maize is steady in all positions, the dry weather helping the article. The same remark applies to barley, which is not very plentifully offered "forward." Oats are very firm the last few days, and some sorts show an advance. Beans are cheaper, new Saida having been sold for London, April-May B. L., at 32s. C. F. & I. white peas quite steady, but not much doing. No millet on the market, but dari arrives in small lots, and sells at about late rates. Lentils are again cheaper to sell.

Kufek's circular of April 18, reads as follows:

The weather is still rather cold for the season and in the absence of warm showers vegetation makes very little progress indeed. Farmers' deliveries of wheat continue on a liberal scale, namely, 221,000 qrs. at the average price of 42s 1d against 45s 11d same time last year.

Stimulated by somewhat unfavorable reports of the prospects of the winter wheat

crop in America, our market has become rather firmer, during the last few days. A further downward movement in the value of flour, is therefore now stopped, and though sellers have not been able to obtain any advance in price, a fair amount of business in all descriptions of flour has been transacted.

Prices of foreign flour are certainly very moderate and relatively lower than wheat.

An improved demand for wheat has been experienced during the week, and sellers have been able to realize 1d per cental advance on last week's quotations.

BOOK NOTICES.

LITTELL'S LIVING AGE. The numbers of *The Living Age* for April 14th and 21st contains A Few Words About the Eighteenth Century, *Nineteenth Century*; Miss Burney's Own Story, and The Enchanted Lake, *Contemporary*; Jonathan Swift, *Blackwood*; Scenes during the Winter of 1794-5, *Temple Bar*; Queen Victoria as Goddess. Startling Poetry, The Conditions of "The Grand Style," Sir George Jessel, and Socialism and Anarchism at Geneva, *Spectator*; and in the line of fiction "Under the Snow," "The Three Strangers," and "The Wizard's Son," with the usual quantity of poetry.

The number for April 7th begins a new volume. A new volume began with the first number of January. For fifty-two numbers of sixty-four large pages each (or more than 3,300 pages a year) the subscription price (\$8) is low; while for \$10.50 the publishers offer to send any one of the American \$4.00 monthlies or weeklies with *The Living Age* for a year, both postpaid. Littell & Co., Boston, are the publishers.

A FAVORITE PAPER. For judicious editing, select and popular contributors, and sprightly and entertaining reading, the *Youth's Companion*, of Boston, has no superior among the youth's publications. It has more than two hundred thousand subscribers, and unquestionably merits its success. A Special Correspondent—the well-known author Mrs. A. H. Leonovens, has been sent to Russia by the *Youth's Companion*, and will soon contribute a striking series of articles on "Life in the Out-of-the-way Nooks and Corners of Russia."

"THE 'CORNER' COMMITTEE ON CORNERS."

The "Corner" Committee of the Legislature have made their report, in which they divide corners into "accidental corners," resulting from fires, floods, or other operations of nature, which they say, do no great harm, are temporary in their nature, and at any rate cannot be prevented, and "protective corners," which are made by persons who sell without intending to deliver unless the value falls below the price at which they have sold. What the Committee think of "protective corners," as regards their effect on the public, does not clearly appear, but it seems as if they had a low opinion of those who make them.

On "futures" the Committee are, on the whole, inclined to look with a lenient eye, and do not see their way to compelling merchants by law to deliver everything they sell, and to acquire possession of it before they sell it. In fact, they have discovered, after careful inquiry—

"that the system of buying and selling for future delivery, to use the words of a witness, 'is the invention of a great necessity, and has answered the needs so well and has helped to build up interior towns and large cities and mercantile exchanges so rapidly, that it is universally recognized as part of our great and growing commercial development.'"

"But it has been urged that sales for future delivery cause violent fluctuations in values greater than those which occurred prior to their general introduction into commercial trading. This statement has not been substantiated, however. Indeed, the evidence tends to show that the effect is, to some extent, quite the reverse."

The Committee also examined the question whether, supposing "futures" to be on the whole useful or indispensable to commerce, there was not "gambling" in them. They were compelled to admit that there was occasionally, among the "young and inexperienced," who will over-trade and operate on margins and what not. The Committee is not, however, prepared to prohibit futures in order to stop gambling. Of the system of "puts" and "calls," as carried on in "bucket-shops" and such places, the report speaks in terms of crushing severity. It adds, however, that the existing laws, if enforced, would break up the bucket-shops and punish the operator in puts and calls, and it asks, therefore, with much solemnity, conceding it to be "true that the operation of this system is attended with some objectionable features, would it be wise to abrogate or legislate out of existence the whole credit system because to the abuse of it can be traced in a large measure the failures and misfortunes which so often overtake merchants and commercial institutions? Shall our code or legal ethics present this paradox, that merchandise may be sold and delivered to the purchaser upon the promise of future payment, and at the same time deny the right to sell merchandise for future delivery with payment to be made upon delivery? Should it not be the end and aim of legislation in this state to attract and encourage every influence and element that will establish and perpetuate the commercial interests of her commercial metropolis?"

We answer unhesitatingly that to abrogate or legislate out of existence our whole credit system, in order to put down bucket-shops, would be a very unwise step, and we thank the Committee on behalf of the commercial

world for throwing the weight of their influence against it.

While greatly admiring the whole report, which we think is the most important that has appeared in any commercial community since that of the Bullion Committee, what we like best in it is the recommendations. The first is that a tax should be levied on all sales for future delivery, to be collected at the time of settlement if no delivery takes place. There is to be no tax, however, on purchase for future delivery, which is just as wicked as sale, and the Committee fails to point out how the tax is to be collected at the time of settlement. Settlement in such cases consists in handing over a check for the difference or in crediting or charging somebody in a current account. Would the Committee have all such settlements made before a notary public or the sheriff? Was such a tax ever collected anywhere, or, in fact, proposed? Would it not be about as fruitful as a tax on sneezing in all cases where a person sneezes more than once at a time?

The Committee has got now to the point reached by the Illinois Legislature after ten years' experience of an attempt to put down futures and corners by law—that is, to the point of admitting that such attempts are idle, and ought not to be made by a commercial community. All excess in a thing which is harmless or useful in moderation is apt to be beyond the reach of law, and is pretty sure to be self-curing, if curable at all. No penalties of corners, or overtrading, or speculation which the wisdom of legislatures can devise, are half so effective as those which result naturally from the practice itself to those engaged in it. The reason why commercial gambling, in fact, is so much reprobated by the world generally is that those who engage in it usually come to grief, and lose everything they possess—a punishment which the law would not decree and could not enforce.—*The Nation*.

AN IMPORTANT PATENT DECISION.—The Secretary of the Interior has confirmed the decision of the Commissioner of Patents, holding that he has authority to institute proceedings like those in interference cases, to obtain testimony upon which to determine whether an invention has been in public use or on sale for two years, or more prior to the filing of an application for a patent therefor. Under this decision, a new practice will be established in the Patent-Office, substantially as follows: Where a petition is presented asking that an investigation be made to determine whether an invention which is the subject of an application for a patent has been in public use for two years, the Commissioner will direct the Examiner of Interferences to fix a time for taking testimony by the petitioner to show the facts alleged in the petition, giving thirty days for the production of such testimony. At the expiration of that time, the inventor or his assignee may produce testimony to show that the facts alleged are not true. The testimony will be returned to the Patent-office and considered in the same manner as testimony taken in interference cases.

A NEW method of manufacturing belts or bands for machinery, which comes from Paris, is applicable to rubber, woven tissues of gutta-percha, and consists in making the belt in longitudinal ribs or grooves, the main object of which is to increase the capacity of the belt on the same cross section, say twelve inches, by the extra strength put in the same space, and also to prevent so much stretching and variation. Another modification of the same invention is grooving one side of the belt the same as saw teeth, then putting these two pieces together, leaving a plain bearing surface for contact besides, thus making a double belt, which is less liable to stretch or to warp. Especial machinery is built for the purpose, and the claim for it is that better contact is given. The pores are closed during this grooving process, the belts have a higher resisting power, and do not twist on the pulleys. The grooves may be regular, irregular, spiral, or crossed.

AN OLD STORAGE BATTERY PATENT.—Electricians are interested at present in the discovery in the Patent Office of a patent issued February 6, 1861, to C. Kirchof, a New Yorker, for an electric battery which presents all the features of the storage batteries in use at the present day—lead plates immersed in acidulated water, which becomes coated with the oxide of lead. The principle appears to be the same as that of the Plante (French) storage battery, and the storage batteries now in market must hereafter rely upon peculiarities of construction instead of comprehensive claims.

[Compiled for the UNITED STATES MILLER.]

THE HISTORY AND THEORY OF BREAD MAKING.

Pliny informs us that barley was the only species of corn at first used for food; and even after the method of reducing it to flour had been discovered, it was long before mankind learned the art of converting it into cakes.

Ovens were first invented in the East. Their construction was understood by the Jews, the Greeks, and the Asiatics, among whom baking was practised as a distinct profession. In this art the Capadocians, Lydians and Phœnicians are said to have particularly excelled. It was not till about 580 years after the foundation of Rome that these artisans passed into Europe. The Roman armies on their return from Macedonia, brought Grecian bakers with them into Italy. As these bakers had hand-mills beside their ovens, they still continued to be called "pistores" from the ancient practice of bruising the corn in a mortar; and their bake-houses were denominated *pistoria*. In the time of Augustus there were no fewer than 329 public bake-houses in Rome, almost the whole of which were in the hands of Greeks, who long continued the only persons in that city acquainted with the art of baking good bread.

In nothing, perhaps, is the wise and cautious policy of the Roman government more remarkably displayed than in the regulations which it imposed on the bakers within the city. To the foreign bakers who came to Rome with the army from Macedonia, a number of freedmen were associated, formed together an incorporation from which neither they nor their children could separate, and of which even those who married the daughters of bakers were obliged to become members. To this incorporation were entrusted all the mills, utensils, slaves, animals, everything, in short, which belonged to the former bake-houses. In addition to these, they received a considerable portion of land; and nothing was withheld which could assist them in pursuing, to the best advantage, their highly prized labors and trade. The practice of condemning criminals and slaves, for petty offences, to work in the bakehouse, was still continued, and even the judges of Africa were bound to send thither, every five years, such persons as had incurred that kind of chastisement. The bakehouses were distributed throughout the fourteen divisions of the city, and no baker could pass from one into another without special permission. The public granaries were committed to their care; they paid nothing for the corn employed in baking bread that was to be given in largess to the citizens; and the price of the rest was regulated by the magistrates. No corn was given out of these granaries except for the bake-houses, and for the private use of the prince. The bakers had besides private granaries, in which they deposited the grain which they had taken from the public granaries, for immediate use; and if any of them happened to be convicted of having diverted any portion of the grain to another purpose, he was condemned to a ruinous fine of five hundred pounds weight of gold.

Most of these regulations were soon introduced among the Gauls; but it was long before they found their way into the more northern countries of Europe. Borrichius informs us that in Sweden and Norway, the only bread known, so late as the middle of the 16th century, was unleavened cakes kneaded by the women. At what period the art of baking became a separate profession in England, we are not able to ascertain; but this profession is now common to all the countries in Europe and America, and the process of baking is also nearly the same.

For the fermentation of bread, a certain degree of fermentation, not unlike vinous fermentation is requisite, care being taken to avoid acetous fermentation, which renders the bread sour and disagreeable. If dough be left to itself, in a moderately warm place (between 80° and 120°) fermentation comes on. When this is rapid, it is acetous; so that to effect that kind of fermentation of the best bread, a ferment is added, which is either leaven (dough already in a fermenting state) or yeast. Of these ferments, leaven is slow and uncertain, yeast is more effective; and when clean and good, it rapidly induces panary fermentation, but it is often bitter, and sometimes has a disagreeable taste.

All, then, that is essential to make a loaf of bread, is dough to which a certain quantity of yeast has been added. This mixture is put into any convenient mould or form, or shaped into a mass; and after having been kept for a short time in a rather warm place, so that fermentation may have begun, it is subjected to the process of baking in a proper

oven. Carbonic acid is generated, and the viscosity or texture of the dough preventing the immediate escape of that gas the whole mass is puffed up by it, and a light, porous bread is the result. Along with the carbonic acid traces of alcohol are produced, but so insignificant as not to be worth notice; hence the attempts to collect it upon a larger scale have entirely failed in an economical point of view. Other flour besides that of wheat will, under similar circumstances, undergo panary fermentation, but the result is a heavy, unpalatable, and often indigestible bread, so that the addition of a certain quantity of wheat flour is almost always made. It is the gluten in wheat which thus peculiarly fits it for the manufacture of bread, chiefly in consequence of the tough and elastic viscosity which it confers upon the dough.

If we compare the baked loaf with the flour of which it is composed, we shall find that panary fermentation has produced considerable change in the latter. The gluten and the starch, which (exclusive of a little sugar) were the principal components of the flour have mutually acted upon and partially altered each other; the toughness and viscosity of the gluten is gone and the starch no longer forms a gelatinous mixture with hot water, a little sugar is generally formed as well as alcohol, but the principal cause of the change is the evolution of carbonic acid and of oxygen in the form of carbonic acid, the production of which is independent of the presence of external oxygen (or of air).

Instead of deriving the carbonic acid (which gives lightness and porosity to the bread) from fermentation, it has been proposed to substitute less indirect processes for its introduction into the dough. Thus, instead of adding salt to the mixture of flour and water, hydrochloric acid and carbonate of soda, in such exact proportions as to form common salt (chloride of sodium), have been used; in this case the evolved carbonic acid is received in the dough, causing it to rise to the same extent as by fermentation, and good palatable bread may be thus made; but it is very difficult to obtain it free from small doughy lumps, and the commercial hydrochloric acid often contains traces of arsenic.

(FOR THE UNITED STATES MILLER.)

TO ASCERTAIN THE ACTUAL VALUE OF WHEAT FLOUR.

The methods, below stated, of ascertaining the actual value of any sample of flour as an article of food, though not strictly accurate, approximate sufficiently to the truth for all practical purposes, and are well adopted to the wants of the manufacturer and large purchaser.

The value of wheat flour as a food depends upon the quantity of gluten, sugar, starch and phosphate of lime, which it contains; and its superiority over the flour of the grains of the other cereals is because it contains a larger proportion of the first and last of these substances than they do. The approximate quantitative analysis of flour is very simple, and may be easily made by persons unacquainted with chemistry, by attending to the following instructions:

a. Make 1,000 grains of the sample into a dough with a little water, let it rest an hour and then gently knead in successive waters, until the starchy particles are perfectly removed. Collect the portion (*gluten*) left in the hand, drain off the water, place it on a piece of filtering or blotting paper, several times doubled, and set it aside.

b. Mix the several waters employed in the preceding process and set them aside in a tall vessel, to deposit the suspended portion (*starch*). After a sufficient time pour off the clear liquid, and throw the whole of the sediment on a weighed paper filter placed in a funnel, being careful to remove the portion adhering to the bottom of the vessel by means of a little clean water, that none may be lost.

c. Evaporate the decanted liquid, as well as what runs from the filter, until it becomes curdy, then filter it through a piece of weighed blotting paper, and preserve the sediment (*albumen*); next evaporate the residuum to the consistence of a syrup, agitate it with ten times its weight of alcohol, and filter, being careful to wash the paper filter clean with a little alcohol after the solution has passed through it. The substance on the paper is *phosphate of lime and gum*, and must be set aside. By subsequent digestion in water, filtration, and evaporation, the two may be obtained separately.

d. Evaporate or distil off the spirit from the solution and washings, as above; the residuum is *sugar*.

e. Dry the substances educed as above, by a gentle heat, and weigh them. The weight of the albumen may be taken with that of the gluten, as it possesses about the same nutritive value, and also because it has been asserted that the former substance is in reality gluten, and not albumen. By dividing the given weights by 10, the percentage value of the sample is obtained. The pieces of filtering papers employed should be carefully dried and weighed before using them, and the same degree of heat should be employed for this purpose as that to which they will be afterwards exposed in the drying of the substances resulting from the operations.

APHORISMS FROM THE QUARTERS.

(From the Century Bric-a-Brac.)

Your luck aint always ekul to de lenk o' your fishin pole.

Grass don't grow high roun' de corn-crib.

De man aint put togedder right dat don't lub his own dorg.

It takes a hones' miller to keep lean shotes.

Don't kill de old goose in sight o' de fedder-bed.

De full moon is a po' han' to keep secrets.

Old hen got 'nough l'arnin' to tell her own chillun in de dark. J. A. MACON.

TWO OR THREE NEW ONES.

It was only two or three years ago that the owner of a grist mill on a creek in New Hampshire, having a capacity of about 15 barrels per day, entered the mill one morning, and said to his son,

"John, I've been thinking."

"Yes, dad."

"Flour is too low."

"She is that."

"We are all grinding too much."

"We are."

"If we grind less flour the market will stiffen up and prices will advance."

"That's it, dad; your head is as long as a mill race."

The mill was shut down for four months, and at the end of that time flour was just as plentiful and the price was no higher.

"John, I've been thinking," said the old man, as he concluded to start up again.

"Of how we missed it?"

"Exactly; you see my idea of shutting down was all correct and calculated to lessen the supply and increase the demand, and I couldn't think what in Halifax was the matter. I've got her now."

"What?"

"Why, jist about the time we shet down they must have started up two or three new six-barrel mills over in Varmount, and hence the market continued overstocked."

THE ADVANTAGES OF TECHNICAL SCHOOLS.—

The *United States Economist* opines that the active interest now being taken in England in developing technical education, must have an important bearing upon the future of manufactures elsewhere. This is a subject which should commend itself strongly to the attention and support of our people, because it will not do to be late in taking advantage of the leading element in the great problem of superiority in the higher branches of manufacturing industries. The practical education of the young in all the details that enter into the manipulation of raw materials must be of the greatest service, as it will develop a class of thoroughly trained experts, and lead to new and novel methods of treatment in the processes of manufacture. As wealth increases there will be a growing demand for new artistic productions, and of a class where excellence will be the controlling question, as far as price and fashion are concerned. For this reason no pains should be spared in providing technical schools in every section of our country, so as to popularize the study of a most useful and necessary science—for such it really is—and which is, at the same time, both practical and useful. Technical schools undoubtedly develop a fondness for the manipulation of the various raw materials coming under attention, and this must lead to a feeling of content among those who finally, from choice, choose to earn a livelihood amid the clashing machinery of the mill. The question of fixity of labor, combined with educated skill in the use of materials, is one of great interest to American manufacturers. In England, the development of this system of education appears to have been rapid of late, and will, unquestionably, make great progress in the future. Anything that tends to raise the standard of manufactures at this time has a special value, for the reason that the best products command the best prices; being in increasing demand, and to secure fine manufactures, it is necessary to have skilled operatives of the best class.

GARDEN CITY

1st Break Machine

—AND—

BRUSH SCRAPER

—WITH—

ASPIRATOR.

To Millers Operating Buhr Mills.

We guarantee to improve the grade of your flour by the use of our **1st BREAK MACHINE** and **BRUSH SCALPER**. Putting in these machines will necessitate no other changes in the present arrangements in your mills.

To Millers Operating Roller Mills.

By the use of our **1st BREAK MACHINE** and **BRUSH SCALPER** you can positively remove all seam impurities and germs after the first break, thereby obtaining better results.

Write for descriptive catalogue and prices.

PRICES REDUCED!

IMPROVED GARDEN CITY

Middlings Purifier

—WITH—

Traveling Cloth Cleaners.

Our improved Purifier has every device requisite to make it perfect, and every one in use is giving the greatest satisfaction to the users. The Cloth Cleaners are guaranteed to clean the cloth better than is done on any other purifier.

Over 4000 Garden City Purifiers in use, nearly 800 of which are the Improved Machine.

The **Best** and now the **Cheapest**. Write for circulars and price list.

We are agents for the

BODMER

BOLTING CLOTH

Which has long been acknowledged as the best made, and which has lately been further improved, making it now *beyond competition*. We make it up in the best style at short notice. Send for prices and samples.

Garden City Mill Furnishing Company,

CHICAGO, ILL.

[Mention this paper when you write to us.]

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, Nos. 116 & 118 GRAND AVENUE, MILWAUKEE, WIS.

SUBSCRIPTION PRICE.—PER YEAR, IN ADVANCE.

To American subscribers, postage prepaid.....\$1 00

To Canadian subscribers, postage prepaid.....1 00

Foreign Subscriptions.....1 50

All Drafts and Post-Office Money Orders must be made

payable to E. Harrison Cawker.

Bills for advertising will be sent monthly, unless other-

wise agreed upon.

For estimates for advertising, address the UNITED STATES

MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second

class matter.]

MILWAUKEE, MAY, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234; California, 209; Colorado, 52; Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennessee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia, 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeols type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances. This work is indispensable to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

JUST A WORD, PLEASE.

Our April number concluded the seventh year of the existence of the UNITED STATES MILLER. We issue this first number of our eighth year with feelings of satisfaction at the progress we have made. It is not our way to brag a great deal; but it really makes us feel considerable pride when we compare the little sheet we issued in May, 1876, with our present one.

KANSAS millers are about to organize a mutual insurance company.

MESSRS. BIRGE & SMITH, Millwrights and Mill-builders of Milwaukee, report business good this Spring. They are crowded with orders.

WE were pleased to receive a friendly call April 20, from Mr. H. T. Vandercook, representing the Geo. T. Smith Middlings Purifier Co., at Jackson, Mich.

THE railroads in India have reduced their freight charges on wheat from the interior, and it is thought probable that it will stimulate wheat exports to a considerable extent.

WE recently had a pleasant call from H. W. Lyman of the firm of H. W. Lyman & Co. of Port Washington, Wis. This firm is doing a very extensive business in malleable iron casting, etc.

MR. J. E. Loomis, of St. Louis, representing the firm of Edw. P. Allis & Co., called on us March 30. Mr. Loomis reports the mill-furnishing trade to be fairly good in Missouri, although milling is dull just now.

SOME writers question the constitutionality of the tariff bill lately passed by Congress. It appears to be, however, a matter of great difficulty to get the question of constitutionality before the United States Supreme Court for decision.

WE have received from Mr. James Barker, General Passenger Agent of the Wisconsin Central Railroad a handsome little book issued by his Company entitled "The Apostle Islands and Lake Superior." It is beautifully printed, finely illustrated, and the descriptive matter is so good that when one has finished reading it he feels like packing up his gun and fishing tackle and starting away at once for that delightful section of the country

penetrated by the Wisconsin Central Railroad. So far as we are personally concerned, we give fair warning to the fish that we are coming for them fully armed and equipped with the best fishing tackle we can borrow.

WE have recently received from the John T. Noye Manufacturing Co., of Buffalo, N. Y., a copy of their handsome new catalogue, for 1883. It is "a daisy," indeed, so to speak. It is well compiled, thoroughly illustrated and elegantly printed. Millers will do well to write for one at the earliest date.

THE great case of Downton vs. The Yaeger Milling Co. for infringement of plaintiff's patent on roller mill and process patents came up before the United States Supreme Court at Washington, and the arguments were all concluded April 17th. No decision has been rendered yet, and there will probably not be for some time to come. The case is one of great importance and a final decision is anxiously awaited.

THE National Exposition of Railway Appliances, to be held in Chicago from May 24 to June 23, promises to be a notable event. The demand for space is very great and beyond expectation. To accommodate exhibitors about 200,000 square feet are to be added to the space heretofore available for exposition purposes. This will be quadrupling the capacity of the present building. In the department of "old curiosities" will be shown Stephenson's "Rocket," the first practical locomotive built, which has been brought from the South Kensington Museum, England, for the occasion. Along with it will be exhibited a series of the earliest railway appliances, contrasted with the latest, so that the spectator will be able to measure at a glance the progress made in locomotive engineering in the last fifty years.

THE SOUTHERN EXPOSITION. The main building for the Southern Exposition to open at Louisville, Ky., August 1, is now in a sufficiently advanced stage of construction to give the spectator some idea of its extensive proportions. It will be one of the largest exposition buildings ever erected, as will be seen from the following comparisons of the area in square feet, of the main buildings of the world's great industrial expositions:

London, 1851.....	989,884
New York, 1853.....	249,891
Paris, 1855.....	545,934
Paris, 1863.....	456,923
Vienna, 1872.....	480,559
London, 1862.....	1,400,000
Philadelphia, 1876.....	872,320
Atlanta, 1881.....	107,520
Southern Exposition at Louisville.....	677,400

It thus appears that the main building of the Southern Exposition will be larger than the main building at Vienna in 1873, at Paris in 1863 and 1855, and New York in 1853.

PRESERVATION OF FLOUR.

THE Boston Journal of Chemistry says it frequently happens that wheat or rye flour, in spite of the greatest care in baking, yields an inferior loaf, and the failure is commonly attributed to adulteration; but when submitted to investigation, neither microscopic nor chemical tests reveal any adulteration. Such flour is returned to the miller or dealer as unfit for use. The miller says the flour was injured by the heating of the stones, and the dealer attributes the defect to the circumstance that the sun must have shown upon the sacks during transportation. It has been proved by numerous experiments, that flour cannot bear the action of the sun, even when exposed directly to its rays. When flour is exposed to the heat of the sun an alteration takes place in the gluten similar to that produced by the heating of the stones. For this reason it is advisable that the transportation of flour should take place, if possible, on cool days or by night, as well as that flour should be stored in a cool place.

MINNESOTA MILLERS' ASSOCIATION.

The Minnesota millers met in convention at Minneapolis, April 10, President W. P. Brown, of Red Wing, in the chair. The treasurer's report showed \$1,097.26 on hand and no liabilities. Fifty milling firms belong to the association, representing a capacity equal to 927 run of stone. The following officers were then elected: President, W. P. Brown, Red Wing; Frank R. Pettit, Minneapolis, Sec'y; W. F. Cahill, Minneapolis, treasurer. The discussion following on patents litigation, filing of protective bonds, etc., was very similar to that in our report of the proceedings of the Wisconsin Association. [See report on page 12.]

A resolution was passed recommending members to use ten hoop barrels for patent flour after June 1, 1883.

Mr. Ames called attention to laws recently passed in Dakota and Minnesota enabling the mortgagee to recover at any time during six years from the buyer, the price of wheat sold by the mortgagee. He said: "This affects every miller and grain buyer, as it is impossible to keep track of every chattel mortgage on file in the State. The agricultural machinery dealers forced this law through both legislatures, and proposed to put it in force this summer on cases from one to six years old. It appears that this law has been declared legal and that nothing can be done but to work for its repeal next winter."

After a general talk about the amount of wheat in farmers' hands, etc., the convention adjourned to meet the second Tuesday in April, 1884.

BUSINESS EDUCATION AND BUSINESS MEN.

WE but express the conviction and experience of the business community in saying that the better business education of business men in general would be the best remedy for and safeguard against many evils and embarrassments existing in the business world which arise from ignorance of the principles and methods, in accordance with which business affairs should be conducted. We deem it our duty therefore to urge the claims of the SPENCERIAN BUSINESS COLLEGE, Milwaukee, knowing, as we do, that it's work is thoroughly and conscientiously done, and that it is accomplishing much for the improvement of the qualifications and character of young people of both sexes entering business life. Its advantages are the best, and students are received at any time. For circulars or information address, R. C. Spencer, Milwaukee, Wis.

WINTER WHEAT.

ACREAGE.

The returns April 1, of comparative area seeded to winter wheat, indicate a very small increase in the breadth in this cereal, averaging scarcely one per cent. As nearly as can be ascertained, the acreage is as follows, counting the Pacific coast crop as winter wheat:

STATES.	ACRES.	Per cent. of last year.
Connecticut.....	2,100	101
New York.....	780,100	101
New Jersey.....	154,000	100
Pennsylvania.....	1,518,400	102
Delaware.....	96,800	98
Maryland.....	626,200	101
Virginia.....	928,000	101
North Carolina.....	717,100	101
South Carolina.....	223,100	97
Georgia.....	494,700	97
Alabama.....	282,100	99
Mississippi.....	52,200	95
Louisiana.....	2,200	100
Texas.....	490,200	97
Arkansas.....	257,100	101
Tennessee.....	1,234,800	98
West Virginia.....	425,700	99
Kentucky.....	1,287,000	100
Ohio.....	2,847,200	99
Michigan.....	1,965,100	99
Indiana.....	2,735,300	99
Illinois.....	3,015,100	102
Missouri.....	2,311,600	99
Kansas.....	1,449,100	95
California.....	3,043,700	110
Oregon.....	795,300	110

The acreage of these States in 1882, was 27,482,150 acres; it appears to be 27,734,200 acres at the present time. It is probable that these figures are fairly accurate, and they will stand as the acreage of winter wheat in these States, subject to modification from substitution of other crops on winter-killed areas, or from more complete information concerning districts not fully represented.

THE problem of compressing bran still continues to excite great attention among millers and inventors all over the country. H. G. Blinn, of Clinton, Ia., recently wrote that he believed it impossible to construct a machine that would compress 100 pounds of bran into a cube of fifteen inches, which is one of the requisites desired by the Millers' National Association.

In reply to Mr. Blinn, Mr. Seamans, secretary of the Millers' National Association, wrote a letter to the *Millers Journal*, N. Y., from which we quote as follows:

Mr. Blinn says: "If the Association insists that the size of the package of 100 pounds shall be, as per circular, not to exceed a 15-inch cube, it can't be done." Allow me to say that the gentleman is mistaken.

The Belt Packing Company, of Minneapolis, will pack one ton of bran in a space 6½ x 24 x 24 feet, which is equal to 3,375 cubic inches for 100 pounds. I have a sample in my office made by this machine, which is compressed to the rate of 3,150 cubic inches for 100 pounds. I have another compressed at the rate of 3,075 cubic inches; both are pressed dry. The party producing the latter sample says of his machine: "My machine will compress 110 pounds in a cube of fifteen inches square, which is more than you require. My machine is very simple, easy to operate, worked by hand or power, is not expensive. Full size, 9 feet high, 34 x 2 feet on floor," &c., &c.

I have letters from at least ten parties that claim to be able to fulfill the requirements. A machine is now in operation in Chicago,

which will not only compress dry bran to a much greater density than we require, but will compress straw and hay to the density of maple wood.

It will not do in this age and generation for any man or set of men to proclaim to the world that what they may not be able to accomplish is impossible. Mr. Blinn's machine may equal his ambition—he is satisfactory to him—but will not help us to export our bran as at present represented to work.

ANNUAL MEETING OF THE MISSOURI MILLERS' ASSOCIATION.

APRIL 13th, the members of the Missouri Millers' Association met at Hannibal, Mo., President James F. Lawton, of Carrollton, presided. Secretary D. B. Kirk's report showed that fifty firms belonged to the Association. The treasurer's report showed \$100.87 in the treasury and no liabilities. An assessment of \$10 per unit of capacity (at present there are 274) was ordered.

President Lawton made a short speech in regard to operative millers, millers insurance, milling journals and other subjects. In regard to the milling newspapers, he said:

Without the slightest wish to pander to the milling press as a supplicant for notice, I must recommend to our members to take every milling paper they conveniently can. Assist the publisher and the advertiser, and by so doing you will most assuredly help yourself. A miller can not keep pace with the improvements unless he reads. The experience of the past may be changed on the morrow. Reason will enable us to determine the right though we commence prejudiced. We have every variety of ideas and experiences presented to us, and we can silently adopt or reject without feeling worried by the argument in person of some neighboring miller. When a miller has not time to glance over a good milling journal, he has the prospect of not losing much time counting his profits. The milling journals have been friendly to all of our organizations, and I think we are alike dependent one on the other.

The past officers were re-elected.

The Association, after passing resolutions sympathetic with and highly complimentary to Geo. Bain, Esq., president of the Millers' National Association, adjourned to meet on the second Tuesday in April, 1884.

POSTAL CHANGES.

Among the changes of general public importance effected by the last post-office appropriation bill are the reduction in the letter postage rate to two cents and the provision for transmitting money through the mails by a postal note payable to bearer at any money-order office which may be designated by the purchaser of the note. This note must be for an amount under \$5, and will cost three cents.

The postal note will only be good for three months from the date of its issue, but can then be renewed by application to the Superintendent of the Money Order Bureau at Washington, when a duplicate will be issued to the holder or party making the demand upon payment of an additional sum of three cents.

The two-cent letter rate will not go into operation until October 1.

Money orders will be issued for sums not to exceed \$100 in amount at the following scale of charges: For orders not exceeding \$10, 8 cents; for orders exceeding \$10 and not exceeding \$15, 10 cents; for orders exceeding \$15 and not exceeding \$30, 15 cents; exceeding \$30 and not exceeding \$40, 20 cents; exceeding \$40 and not exceeding \$50, 25 cents; exceeding \$50 and not exceeding \$60, 30 cents; exceeding \$60 and not exceeding \$70, 35 cents; exceeding \$70 and not exceeding \$80, 40 cents; exceeding \$80 and not exceeding \$100, 45 cents.

RECENT MILLING PATENTS.

The following patents were issued April 3, 1883:

Guage for dressing and truing millstones—Hamilton

D. Coleman, New Orleans, La.

Conveyor for mill products—Robert Craik, Hawley, Minn.

Sieve for roller mills—Henry J. and G. A. Gilbert, Racine, Wis.

Roller mill—Daniel W. Marmon and J. Warrington, Indianapolis, Ind.

The following patents were issued April 10, 1883:

Roller grinding mill—Samuel L. Bean, Washington, D.C.

Apparatus for regulating of the flow and delivery of water through canals, flumes and waterways—James Emerson, Holyoke, Mass.

Roller mill—John Livingston, Assignor to Stout Mills & Temple, Dayton, Ohio.

Roller grinding mill—William Tennant, Faribault, Minn. (two patents).

The following patents were issued April 17, 1883:

Reduction machine—John Case, Columbus, O.

Roller mill—Daniel W. Marmon, Indianapolis, Ind.

Adjusting and supporting mill stones, etc.—Geo. Millbank, Chillicothe, Mo.

Screw-conveyor—Webster & Comstock Mfg. Co., Chicago, Ill.

Centrifugal machine—David M. Weston, Boston, Mass.

The following patents were issued April 24, 1883:

Cockle screen—John B. Cornwall, assigned to Barnard & Leas Mfg. Co. Moline, Ill.

Bolting regulator—Joseph E. Fiske, Jamestown, N. Y.

Roller mill, (2 patents)—Henry J. Gilbert, Racine, Wis.

Roller mill—Daniel Marmon, assignor to Nordyke & Marmon Co., Indianapolis, Ind.

Machine for hulling and cleaning wheat—Samuel K. Todd, Eugene, Ind.

GEORGE BAIN.

The announcement was made April 9, that The Atlantic Milling Co., of St. Louis, Geo. Bain, President, had failed, but we are happy to state that matters have been satisfactorily adjusted and that the Company is again upon its feet and ready for business. A statement of assets and liabilities showed a considerable excess of the former. The temporary suspension is said to have been caused by the depression in the flour trade. Mr. Bain sails to Europe May 1st on business. The business will run right along as heretofore. Mr. Bain's temporary misfortunes must have been gratifying to him in one way—it showed him conclusively what a host of genuine friends he has ready at a moments' notice to "bear a hand" and help him when needed. We sincerely wish Mr. Bain the utmost prosperity in the future, and in so speaking we know we only voice the sentiments of the trade both far and near—on this and on the other side of the Atlantic. We are very sorry that Mr. Bain, who has been so long president of the Millers' National Association, finds it necessary to be absent at the approaching meeting.

[For the UNITED STATES MILLER.]

DETECTION AND ESTIMATION OF ALUM IN FLOUR.

For quantitative estimation, Wanklyn uses at least 1544 grains of flour; incinerates it in a stream of oxygen, and treats the ash, not with hydrochloric or nitric acid, but with a weighed quantity of strong sulphuric acid; heats the moistened mass till the sulphuric acid begins to evaporate, mixes it with a little water and a weighed quantity of caustic potash; and precipitates the alumina from the solution with ammonium chloride. The object of weighing the re-agents is to take account of any small quantity of alumina that may be contained in them.

Wanklyn also points out that sulphuric acid always appears in the ash of flour, being formed during the incineration from the gluten, which contains about 1 per cent. of sulphur; and that consequently, for the detection of alum in flour and bread, it is of no use to determine the amount of sulphuric acid in the ash, the increase in the amount of their constituent caused by this adulteration being too small to yield any definite result. It is better to exhaust the flour with cold water, separate the gluten, and test for sulphuric acid in the filtrate.

The presence of alum in flour may also be detected by mixing 772 grains of flour with 3.05 cubic inches of water, 0.03 cubic inches of logwood solution, 0.3 cubic inches of aqueous ammonium carbonate. If alum is present, even in the proportion of 1 part in 10,000 the color of the emulsion will be changed from pink to lavender-blue.

THE GREATEST RAILROAD ON EARTH.

The Chicago, Milwaukee & St. Paul Railway,—Nearly 5,000 Miles of Road in Operation.

THE CHICAGO, MILWAUKEE & ST. PAUL COMPANY'S report for 1882, nineteenth annual, is just issued. It shows a gratifying increase in the Company's several branches of business, and the financial condition of the Company to be most satisfactory, the net earnings during the year having been \$8,200,652.65. Compared with the earnings of 1881, those of 1882 were \$3,361,264.20 in excess.

During the year the Company has constructed the following branches and extensions: In the State of Iowa, the Chicago & Pacific Western Division has been completed to Council Bluffs, 64 miles, making a continuous road on the shortest practicable line, 488 miles in length, from Chicago to a connection with the Union Pacific and other railroads at the Missouri River. On the Iowa & Dakota Division a branch has been constructed from Spencer to Lake Okoboji, 17 miles; and the Emmetsburg branch has been extended 7 miles to Estherville. The Volga River branch of the Dubuque Division has been completed to West Union, the county seat of Fayette County, 14 miles. Of the line from Cedar Falls to Ottumwa, 2 miles have been completed and 10 miles graded ready for the track, and depot grounds purchased at Ottumwa. The narrow-gauge road, formerly owned by the Iowa Eastern Railroad Company, extending from Beulah, on the Iowa & Minnesota Division, to Stulta, 15 miles, has been purchased and changed to standard gauge. These add 119 miles to the Company's lines in Iowa.

In Wisconsin, a branch has been constructed from Brandon on the Northern Division to Markesan, 12 miles; and the railway of the Chippewa Valley and Superior Railway Company, extending from Wabasha, Minn., to Eau Claire, Wis., 50 miles, including a bridge across the Mississippi River, with a branch from Red Cedar Junction to Cedar Falls, 21 miles, has been purchased. These add 83 miles to the Company's lines in Minnesota.

In Dakota a road has been constructed from Yankton, on the Sioux City & Dakota Division, to Scotland, on the Running Water branch of the Iowa & Dakota Division, 27 miles; and one from Mitchell, on the main line of the Iowa & Dakota Division, north to Letcher, 14 miles. These increase the mileage in Dakota 41 miles; and make a total increase of 303 miles during the year, which, added to the 4,217 miles owned by the Company as by the last report, make it the owner of 4,520 miles of completed railway.

On the railway purchased from the Chippewa Valley & Superior Railway Company, there is annually manufactured over 300,000,000 feet of pine lumber, besides shingles and lath, nearly all of which instead of being rafted as hitherto, down the Chippewa and Mississippi rivers to Dubuque and St. Louis and points between those cities, will now be sent direct from the saw mills to the farmers of Minnesota, Dakota and Iowa over the lines of this Company.

The short pieces of road constructed in Dakota, from Yankton to Scotland and from Mitchell north, are in what is known as the James (or Dakota) River Valley, and are intended to form parts of the line of the Company, extending north from Yankton through the same. Seventy-three miles of this line were constructed from Ellendale to Ashton during the year 1881, and connect with the Hastings and Dakota line at Aberdeen. The distance from Ashton to Letcher is 75 miles, and from Mitchell to Scotland 45 miles. The construction of these two links would give the company a continuous line from Sioux City and Yankton through said valley to within 65 miles of the Northern Pacific.

REAL ESTATE PURCHASES. In the last annual report it was shown that the Company had, during the year 1881, paid \$575,000 for real estate; yet, large as these purchases were, the Company had been compelled by increased business to buy additional grounds or terminal facilities in Chicago, Milwaukee and St. Paul, and for machine shops at Minneapolis, as follows:

At Chicago.....	\$ 38,709 07
At Milwaukee.....	33,784 14
At St. Paul.....	6,262 40
At Minneapolis.....	65,083 95
And for additional grounds at other points.....	15,540 47
Total.....	259,329 03

COMPANY COAL LANDS. In the last annual report was stated that, for the purpose of securing a reliable supply of fuel to meet the large and growing wants of the Company, coal lands had been purchased at Braceville, in Illinois, and at Oskaloosa, in Iowa. During the year additional coal lands have been purchased at Perry, on the Council Bluffs Line, about 125 miles east of Council Bluffs. The coal lands of the Company consist of 3,282 acres at Braceville, with 117 houses and three shafts, costing \$426,823.61; 2017 acres at Oskaloosa, with 107 houses and three shafts, costing \$268,748.65; and 240 acres at Perry, with twenty-three houses and one shaft, costing \$35,069.55. The Braceville mine furnished during the year 242,136 tons of coal, the Oskaloosa 196,998 tons, and the Perry 3000 tons, being about two-thirds of the consumption for the year; and these mines are deemed capable of yielding a full supply for all the requirement of the Company. The total cost of these properties is \$730,641.81.

The lands stated in the last report as belonging to the Company have been sold during the year, except about 100,000 acres, mostly in the State of Wisconsin. The net receipts to the treasury of the Company from sales of land during the years 1881 and 1882 are \$1,224,364.38; and the amount now due the Company on contracts and mortgages is \$1,787,508.90; in addition to which the sum of \$210,000 is held in trust to abide the decision of a suit brought by this company in the Circuit Court of the United States for the District of Iowa, against the Sioux City & St. Paul Railroad Company, which was by court decided in this Company's favor, and is now pending on appeal in the Supreme Court of the United States.

There has been purchased and added to the equipment of the Company during the year, as follows:

Locomotives.....	100
Sleepers.....	6
Passenger cars.....	46
Dining cars.....	6
Box cars.....	1,100
Flat cars.....	100
Stock cars.....	1,000

ST. PAUL STOCK. The entire cost of the Company's property, including rolling stock, depot grounds, cattle yards, elevators, warehouses, docks, coal lands, and other property is represented by

Common stock.....	\$27,904,261
Preferred stock.....	16,447,493
Total stock.....	\$44,351,754
Mortgage bonds, including all liens on purchased roads.....	89,635,500

Making the total of bonds and stock \$133,987,244 on 4520 miles of road, being at the rate of \$29,643 per mile.

The preferred stock of the Company was increased during the year \$2,046,000 by the conversion of mortgage bonds into preferred stock, as provided by the articles of association and

the terms of the bonds. The bonds so converted were:

La Crosse Division first mortgage.....	\$301,000
Iowa and Minnesota Division.....	230,000
Iowa and Dakota Division.....	17,000
Iowa and Dakota Division Extension.....	482,000
St. Paul (or River) Division.....	193,000
Hastings & Dakota Division (old), payable in 1903.....	8,000
Chicago and Milwaukee Division.....	101,000
Consolidated.....	655,000
Prairie du Chien Division, 7-3 10 per cent.....	59,000

And thus the holders of all classes of bonds which are convertible into preferred stock availed themselves of the privilege.

In accordance with authority given by the stockholders at the last annual meeting, the common stock was increased \$7,500,000; \$7,101,948 of which was issued at par to the stockholders who subscribed for the same, one-half payable in cash and one-half charged to income account.

EARNINGS AND OPERATING EXPENSES.

Annexed to the Board of Directors' report is that of Manager S. S. Merrill. He gives a comparative statement of earnings and operating expenses for the years 1881 and 1882, which are furnished below:

Earnings—	1881.	1882.	Increase.
From freight.....	\$11,884,795.53	\$14,023,335.25	\$2,117,539.72
From passengers.....	3,938,988.77	5,179,078.04	1,240,089.27
From mails express, etc.....	1,201,677.36	1,205,312.57	3,635.21
Total earnings.....	\$17,025,461.66	\$20,386,725.86	\$3,361,264.20

Expenses—	1881.	1882.	Increase.
Repairs of track.....	\$1,542,690.51	\$1,702,876.98	\$160,186.47
Renewal of track.....	341,370.04	221,112.30	120,257.74
Repairs of bridges.....	184,428.78	285,850.25	101,421.47
Repairs of fences.....	67,093.72	65,975.51	1,118.21
Repairs of buildings.....	224,310.31	204,514.25	19,796.06
Repairs of locomotives.....	566,970.97	827,511.08	260,540.11
Repairs of cars.....	699,326.18	1,042,901.65	343,575.47
Repairs of tools and machinery.....	101,376.56	128,690.63	27,314.07
Management and general offices.....	296,646.44	348,615.24	51,968.80
Foreign agency and advertising.....	111,008.04	181,356.45	70,348.41
Station service.....	1,388,650.64	1,677,599.53	288,948.89
Conductors, baggage men and brakemen.....	724,473.27	937,156.62	212,683.35
Engineers, firemen and wipers.....	1,047,360.59	1,245,353.54	197,992.95
Train and station supplies.....	346,801.00	356,282.19	10,481.19
Fuel consumed.....	1,581,198.09	1,605,057.00	23,858.91
Oil and waste.....	173,687.24	228,222.37	54,535.13
Personal injuries.....	114,856.02	122,304.50	7,448.48
Damage to property.....	45,170.25	54,997.31	9,827.06
Loss and damage of freight and baggage.....	36,746.59	41,012.58	4,265.99
Legal expenses.....	53,714.37	70,441.24	16,726.87
New York office expenses.....	14,901.17	15,662.37	761.20
Taxes.....	473,166.43	589,613.80	116,447.37
Insurance.....	35,544.99	70,402.03	34,857.04
Miscellaneous expenses.....	65,367.33	93,649.05	28,281.72
Stock yard expenses.....	15,294.92	15,076.38	218.54
Expenses elevator "A".....	21,193.14	10,324.33	10,868.81
Expenses elevators "B" and "C".....	20,001.38	15,999.17	4,002.21
Expenses elevator "D".....	11.97		11.97
Expenses elevator "E".....	89,441.57	18,710.73	70,730.84
Expenses elevator Minneapolis.....	5,228.63	9,342.18	4,113.55
Total expenses.....	\$10,317,931.14	\$12,186,073.21	\$1,868,142.07

RECAPITULATION.	1881.	1882.	Increase.
Gross earnings.....	\$17,025,461.66	\$20,386,725.86	\$3,361,264.20
Total expenses.....	10,317,931.14	12,186,073.21	1,868,142.07
Net earnings.....	\$6,707,530.52	\$8,200,652.65	\$1,493,122.13

INCREASE FOR 1882.

The Company's income, from the several sources, during the year, was as follows:

From freight.....	\$14,023,335.25
From passengers.....	5,179,078.04
From mail service.....	411,568.05
From express service.....	352,374.02
From new service.....	12,582.54
From telegraph.....	13,873.80
From extra baggage.....	6,838.46
From sleeping cars.....	38,034.91
From stock yards.....	141,750.74
From milk.....	73,545.37
From elevator "A".....	36,852.18
From elevator "B" and "C".....	17,057.97
From elevator "D".....	30,313.45
From elevator "E".....	43,014.79
From elevator Minneapolis.....	27,285.29
Total.....	\$20,386,725.86

The Company's equipment Jan. 1, last was as follows:

Locomotives.....	626
Passenger cars (first and second class).....	240
Sleeping cars.....	33
Parlor cars.....	6
Dining cars.....	6
Baggage, postal, mail and express cars.....	176
Box, Freight and caboose cars.....	12,006
Stock cars.....	2,364
Flat and coal cars.....	141,750.74
Wrecking and tool cars, etc.....	4,154
Total.....	33

In fuel and supplies on hand Dec. 31, 1882, the Company had that representing a value of \$1,495,112.82.

During the year the number of miles run by the Company's passenger, freight, wood and gravel trains was 18,305,321.

ROBT. S. WILLIAMS, Esq., so long well known in Milwaukee as head miller of the Reliance and Empire Mills, called on us recently. He is now located at Faribault, Minn. He likes Minnesota and says he will make his abode there in the future.

THE M. SAINT-REQUIER SYSTEM OF MILLING.

A NEW FRENCH SYSTEM.

From an article recently published in *Industry*, we learn that M. Saint-Requier has invented what he terms a "New Process of Milling Flour." The *Miller* thus describes it: M. Saint-Requier, proceeding upon the fact that the greatest demand is now for the whitest flour, color being considered a criterion of purity, describes his process as consisting of stages. The first of these includes an exhaust fan of about 1-horse power; a breaker sifter, 9-10-horse power; a revolving separator, 3-horse power; a decorticator, 6-horse power; a finisher, 2-horse power; making 12-90-horse power for cleaning 25 quarters of wheat per hour, or 550 quarters in 22 working hours.

The second series of operations, viz., the conversion of cleaned wheat into flour, combines, 1st, the cutter, 10-horse power; 2d, the sorter, 1-horse power; 3d, purifiers, 1-horse

power; 4th, milling cylinders, 5-horse power; and 5th, the winnowing machine, 1-horse power; making in all 18-horse power for the flouring of 25 quarters of wheat per hour, or 550 quarters every 22 hours. Instead of being fed into millstones, the wheat is thrown into a large cone, in the middle of which revolves, at an immense speed, a spindle with small steel blades, which cut the wheat to pieces, the cut particles being subsequently converted into flour by passing between rollers. The cost of each sack of flour produced by the best English and French mills is stated to be 6s., or for 350,000 sacks, £105,000, while the cost of a sack of flour by the Requier system is stated to be 2s. 7½d. per sack, or for 350,000 sacks £45,500. The best quality of flour manufactured by the English and French systems is stated to produce 130 per cent. of bread by weight of flour, while the Saint-Requier flour is alleged to give in bread 150 per cent. by weight of flour. It is claimed that this system is not an adaptation of any other method, but that it is absolutely new and stands alone.

HOW A GOOD ENGINE SAVES COAL.

The best automatic engines (non-condensing) furnish one indicated horse-power for about three pounds of good coal, depending somewhat upon the fitness of the engine for the work and the quality of the coal. With a condenser attached, a consumption as low as two pounds may be quoted as good practice. The larger the engine the better the showing compared with smaller engines. For ordinary slide valve engines, the coal burned per indicated horse power will vary from nine to twelve pounds; for the sake of illustration we will say ten pounds, and that the engine is of such size as would require, for a year's use, \$3,000 worth of coal. Now an ordinary adjustable cut-off engine with trotting governor, ought to save at least half that amount of coal, or say \$1,500 per year. If the best automatic engine were employed, using two and a half pounds of coal per horse-power, a further saving of \$750 per year could be effected; or, between the two extremes, \$2,250 per year in saving of coal, without interfering in any way with the power, with the exception, perhaps, that the automatic engine will furnish a better power than the former engine. It is easy to see that it is true economy to buy the best engine and pay the extra cost of construction, if the saving of coal is an element (and it is generally the most important one) entering into the question of selection. The above considerations are given on the authority of Barr, a very careful and conservative writer on steam engineering.

A REMEDY FOR BURNS AND SCALDS.—It is now many years ago, says Mr. F. Peppercorne in the *Popular Science Monthly*, while engaged in some investigations as to the qualities and effects of the alkalies in inflammations of the skin, etc., that he was fortunate enough to discover that a saline lotion, or a saturated solution of bicarbonate of soda in either plain water or camphorated water, if applied speedily, or as soon as possible, to a burned or scalded part, was most effectual in immediately relieving the acute burning pain, and when the burn was only superficial or not severe, removing all pain in the course of a very short time; having also the very great advantage of cleanliness, and, if applied at once, of preventing the usual consequences—a painful blistering of the skin, separation of the epidermis, and, perhaps, more or less of suppuration. For this purpose, all that is necessary is to cut a piece of lint, or old soft rag, or even thick blotting-paper, of a size sufficient to cover the burned or scalded parts, and to keep it constantly well wet with the soda lotion, so as to prevent its drying. By this means it usually happens that all pain ceases in from a quarter to half an hour, or even in much less time. When the main part of a limb, such as the hand and forearm or the foot and leg, has been burned, it is best, when practicable, to plunge the part at once into a jug or pail, or other convenient vessel filled with the soda lotion, and keep it there until the pain subsides; or the limb may be swathed or encircled with a surgeon's cotton bandage previously soaked in the saturated solution and kept constantly wet with it, the relief usually being immediate, provided the solution be saturated and cold. What is now usually sold as bicarbonate of soda is what he has commonly used and recommended, although this is well known to vary much in quality according to where it is manufactured; but it will be found to answer the purpose, although probably Howard's is most to be depended on, the common carbonate being too caustic.

AMERICAN FLOUR IN BRISTOL, ENGLAND.

Report by United States Consul Louis A. Lathrop.

Bristol would seem from its position on the map to be the natural entrepot for American products intended for general distribution throughout Southern England; and it is to a great extent the distributing center for that section as well as for Southern Wales. Indeed, so regular and constant a market has Bristol in the latter section that Bristol is said to feed Southern Wales almost entirely, notwithstanding the circumstance that both Cardiff and Milford Haven have steamers running with more or less regularity to American ports. The trade in breadstuffs has become fixed by way of Bristol, and I am informed that a large portion of the breadstuffs carried by these direct Welsh lines is on account of Bristol importers or through Bristol commission merchants, thus, to all intents and purposes, becoming a part of the Bristol trade.

Those artificial elements that are liable to be introduced into any mercantile community, however, sometimes occur in Bristol, and temporarily change to some extent the field of trade, enlarging it perhaps and perhaps contracting it. For instance, it sometimes happens that a glut of flour in London will compel the London dealer to dispose of his stock at such a rate that he can undersell the Bristol merchant almost in Bristol itself, and vice versa the Bristol man sometimes supplies the demand for flour up to London itself. For the same reason the country between Liverpool and Bristol sometimes goes to Liverpool and sometimes to Bristol for its supplies of American flour, though its normal state is Liverpool-wards. Birmingham is the meeting place of the two tides of trade, and sometimes a glut in the Liverpool market will utterly overcome the normal Bristol tide and send a wave of products far beyond the meeting point; and so, sometimes Bristol is the aggressor.

In the counties to the south and west, Devon, Cornwall, Somerset, Bristol has a large and reliable market, though it very occasionally happens that London can compete, and in this way. Bristol has but one railroad to London, while Exeter to the south and west has two, and the competition between the two is active. It is stated that special rates are sometimes given and discriminating charges made that enable a London man to put flour down in Exeter cheaper than the Bristol merchant can, though the distance between the latter place and Exeter is one-third of the distance between London and Exeter. There seems to exist here in the minds of those in the flour trade a considerable difference of opinion as to whether this last mentioned state of affairs affects the flour market of Bristol at all, and I think the weight of opinion is to the effect that no serious inroads into Bristol's consuming district is made by differential railroad rates. An occasional cargo of flour is landed at Plymouth or Southampton, though seldom, so that Bristol has almost a clear field in the southwestern counties.

During the year 1882 there were imported into Bristol 19,600 tons of flour from foreign countries. An insignificant portion of this was French or Hungarian, imported for the use of the pastry bakers, and commanding a price far beyond the average. The remainder came from the United States, barring a small quantity from Canada. This import was not quite up to the average of former years, and an increase in the amount from the United States may reasonably be expected during the coming year.

Every pound of this United States flour came here by steamer; nearly all under the English flag; nearly all in the two regular steamship lines that ply between Bristol and New York; almost every pound was shipped at New York, and came in sacks, that being the mode preferable to the consumer here.

Most of this flour was sent on consignment to commission merchants in Bristol, experience having proved that this is by all means the most satisfactory mode of handling the stuff, both to seller and buyer. It is very evident, it seems to me, that a miller or New York merchant can do much better with his flour here by sending it to an agent who disseminates samples industriously among, say, fifty or seventy-five possible buyers than he can by endeavoring to build up a regular trade with one or two importing houses or large consumers. In point of fact there is little or no flour coming here from the United States to a regular customer, buying regularly at stated intervals. There is, to be sure, at least one large firm here which imports flour direct, but they have an agent or clerk in New York who buys according to the market, having an eye to ocean and inland freights.

This is a simple transfer of the agent from Bristol to New York, and is added proof that the miller cannot deal as satisfactorily with the Bristol importer direct as through commission merchants. It frequently happens that the consignment to the commission merchant is a consignment practically direct to the consumer, who has ordered it of the commission merchant, who in turn cables the miller or the New York exporter. An American exporter oftentimes cables his agent here that he can sell a certain quantity of specified grade at such a price. It is often disposed of thus. In neither of the above cases, it is evident, can the flour be considered to be shipped on commission, for though it passes through the hands of the middleman on this side, it is ordered from here before shipment.

Millers away from seaboard in the United States are at a disadvantage compared with exporters and millers operating where ocean steamers can come. In the first place, there is added a greater element of uncertainty in the time of arrival at Bristol of the consignment. It is often of vital importance to the importer to have his flour with as little delay as possible, and he can calculate almost to a day the time of its arrival, if coming from a seaport town only. The importer here not only desires to eliminate from his calculations the uncertainty of combined railroad and steamship transportation, but he also wants to deal only with ocean freights. Despite the low rates which interior millers can often obtain on a through bill of lading, the importer here would rather buy in New York, and calculate only on the ocean freight.

It has sometimes happened that a consignment sent by some western miller to this port, through railroad delay, trans-shipment, etc., arrives here after the maturing of the seller's draft, thus depriving the importer of his interest for a few days. Of course this is very exceptionable, but it often happens that a consignment from New York will arrive, be sold, and paid for, before the maturing of the seller's draft. An importer naturally appreciates this little interest, and the further west he buys the more he cuts himself off from all chance of making it.

Commission merchants here tell me that American exporters of flour as a rule will seldom or never profit by the advice or suggestions sent from this side. If a man here does well with a consignment of flour, in spite of representations he makes as to the poor market to the exporter, he possibly receives another consignment, which he is compelled to sacrifice, and which would not have been sent had his advice been heeded. They say further that if they notify an American exporter that the market would stand, say 500 barrels of a certain grade, they are just as likely as not to receive twice or thrice the amount suggested, some of which is sacrificed. I have heard considerable comment on this disposition of American exporters to overdo, and of their consequent losses, and it would seem to me that if an American firm has an agent here who has proved himself trustworthy and reliable, his opinion should be regarded more than it now is. It is often said that small consignments are far more likely to do well than large ones. By a small consignment I mean, say 500 barrels, but a first consignment should not be more than 50 or 100 barrels.

Having now set out what seems to be the best mode of getting the flour here, let me suggest as to its quality and the kind that will best suit the demand. The bulk of the flour used here is inferior as regards color, price and quality. Bristol is improving, I am told, in its taste for flour, but even yet no such general market for a fine grade of flour exists as there is in Liverpool or London. There are many reasons for this, the principal one being that by far the greatest portion of the American flour is used mixed with English. It is evident that the moment our flour approaches in price the English product of equal excellence it is just as cheap to use the English flour unmixed, and that is what the bakers do. The millers here often find it cheaper to mix than to grind, and I am informed that there is no doubt that a considerable portion of the product of English mills is American flour under a new name. It is manifest that the English miller does not need too good a grade for this purpose. He wants a reasonably excellent flour cheaper than his own.

Of course the gist of the matter is in the taste of the consumer, and as yet the price of the loaf is more of an object to him than the appearance or quality. The average consumer here, if selecting between two loaves, would buy the dark and heavy quarter he

has been accustomed to at 13 cents, rather than pay 14 cents for a lighter and more attractive-looking loaf. Moreover, it is considered here almost an act of suicide to eat fresh bread, and the loaf is seldom eaten until at least one day after baking. The English compact loaf stands the test of time far better than our finer American products and is more palatable, after the lapse of a day or more between baking and eating, than our loaf is.

English millers are naturally averse to American competition, and are sometimes able to interfere successfully with the trade, and in this wise: The bakers are generally debtors more or less large to the millers, and they are sometimes given to understand that purchase of American flour will result in financial pressure, a significant hint, generally appreciated.

A brand is no longer a guarantee. I am informed that any flour can be branded in America as desired by the importer on this side. The result is that everything is thoroughly tested by baking it up. Nothing else will be admitted as a test, and a loaf is baked out of every lot the quality of which it is desired to investigate.

I conclude with a verbatim copy of the words of a man thoroughly up in the Bristol trade and worthy of the highest regard. His opinion, or rather statement of facts, is indorsed by the entire flour trade and is highly important. He says: "The most serious objection to American flour is the irregularity of quality. Brands are introduced which find a good demand at a fair profit. Very frequently after the first few shipments the quality is allowed to decline. The reputation of the brand is spoiled, and before the confidence of buyers can be regained, a new brand must be introduced."

(For the UNITED STATES MILLER.)

A SENSIBLE ENGLISHMAN'S VIEWS ON THE AMERICAN PROTECTIVE TARIFF.

[Conclusion].

Milwaukee, April 22d, 1883.

Editor UNITED STATES MILLER:

In the February number of the UNITED STATES MILLER was published the first portion of extracts which were prepared for delivery before the Liverpool, England, Chamber of Commerce, late in 1881 by Mr. Samuel Smith, a gentleman, who has a large acquaintance in this country, and has mingled with Americans for many years. He says, in the preface to the pamphlet, from which we copy—"It is written without bias of any kind, and simply with the view of putting forward the truth as it presents itself to the writer."

We conclude with the following concise explanation of the causes, which produced the panic from 1873 to 1878, they are set forth clearly, and their absolute disconnection with our tariff are plainly shown.

"I would further observe that political economy is far from being an exact science, its formulas are nearly always subject to important limitations, and when they are applied by mere theorists to solve practical problems they often conduct to conclusions the reverse of true. To a knowledge of the science in the abstract, there must be added a practical knowledge of business, or, at least, of public affairs, to make a man able to apply its dicta intelligently; it is more like the science of politics, or what has lately come to be called sociology, and those who know it best will apply its formulas with the greatest caution. Some of the current maxims which pass muster as infallible axioms are utterly misleading when applied to the practical problems of commerce—let me refer to one which is constantly quoted, viz: that all trade is barter, and that imports and exports pay for each other; and to another which one constantly meets with, viz: that an excess of imports is a proof of a wealthy and prosperous nation, and excess of exports of a poor and unprosperous one. Both of these maxims have a certain degree of truth when stated broadly, but are utterly misleading when applied to the commercial phenomena of particular years and particular nations.

I will take leave to illustrate this by reference to the recent experience of British and American trade. For convenience sake I will take the latter first, and examine the sixteen years that have elapsed since the conclusion of their civil war, and divide them into two periods of eight years each. The former was a time of great inflation and extravagant expenditure; the issue of inconvertible paper money caused by the war had produced a fictitious prosperity, and led to heavy imports of European luxuries, while the great cotton crop, the chief article of export, was several

years much reduced. America for these eight years imported in value nearly double what she exported—if the theory that all trade is barter is true, she was lucky in getting 40s. worth of goods for every 20s. she paid with—and if the further theory that excess of imports is a sign of wealth be true, she was rolling in wealth. But what was the true explanation? She was contracting enormous indebtedness in Europe—she was exporting national bonds, state bonds, railway securities, &c., to the extent of hundreds of millions sterling, and laying a foundation for a time of great suffering and distress—her exports and imports no doubt balanced, but in the same way as the expenditures of a spendthrift who pays by giving I O Us.

The time came when these debts had to be liquidated—the commercial crisis from 1873 to 1878 exploded the fabric of fictitious prosperity, severe thrift became the order of the day—imports fell off prodigiously, exports largely increased, and showed for several years a heavy surplus, she became a creditor instead of debtor to Europe and her bonds and securities flowed back as fast as they went out; but a trifling proportion of the Federal debt is now held in Europe, and much fewer securities of all kinds than eight years ago; in addition to which she has supplied herself with an ample gold currency. America has in fact been laying the foundations of national prosperity the past eight years at a wonderful pace. But if we have to go by the formulas I have already referred to, we should have to believe the absurdity that her diminished imports and increased exports were a sign of growing poverty, that she was in fact only getting 10s. worth of goods in return for say 20s. she was paying to the foreigner.

The commercial history of England the last ten years affords a similar illustration—it may be divided into two sections, that of 1870—73, which were four years of great prosperity, and 1874—79, which were six years of great depression. In the first four our exports and imports, when proper allowances were made for re-export of foreign produce, for freight and interest on our immense capital invested abroad, left a large annual surplus, as Mr. Mongredien has admirably shown—indeed out of the great profits of our trade we were investing in fresh capital abroad to the extent of about 100 millions annually. No doubt much of that was lent to bankrupt states and lost, but much more was well invested and returns large interest; the country was really prospering. She was not eating or drinking the balance due to her from abroad as she has done since then. Then followed the six years of bad trade. All the figures were reversed—the imports immensely increased—our exports largely fell off—the balance against this country was on the average about sixty millions worse than for the previous four years.

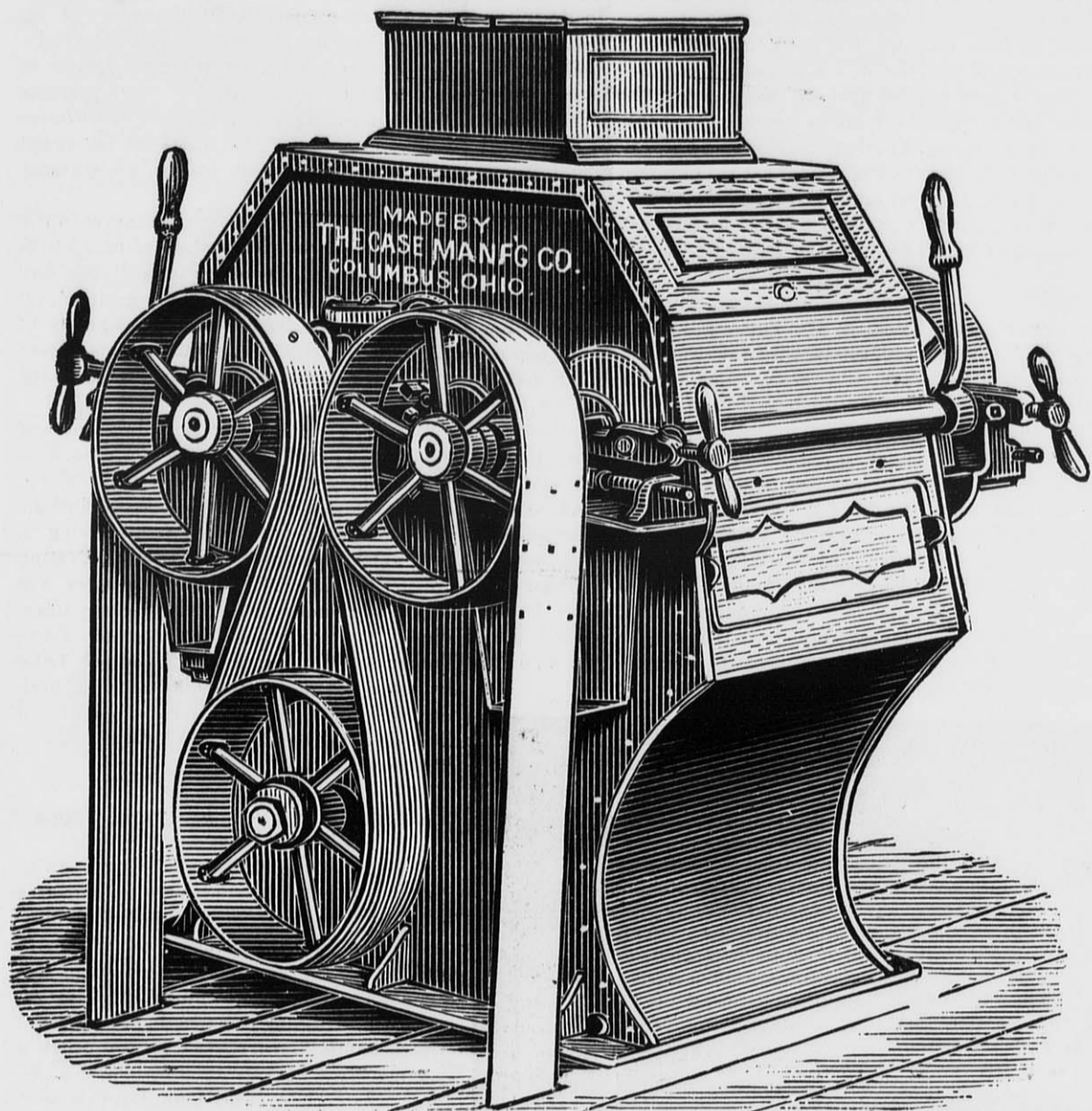
The cause of this is obvious—a succession of bad harvests caused us to import far more food than usual—the foreigner received forty or fifty millions a year more for the food than formerly, and instead of taking our goods in return, he raised his tariff against us, and took less of our goods than before. All the features of our trade became unfavorable, we might almost say alarming, and yet, strange to say, we ought to have been congratulating ourselves on our growing wealth, if the formula be accepted, that excess of imports is the test of a flourishing country. No doubt there is a measure of truth in that formula in-so-far as our large investments in former years enabled us to pay for the prodigious amount of food we require, but certainly it would have been a far truer sign of national prosperity if we had imported less and exported more. The fact is, that the trading of a country resembles in many respects the expenditure of a private individual—where we see a large expenditure maintained for many years, we conclude justly that there must be a large income to sustain it, but an inflated expenditure for a few years often shows only the recklessness of a spendthrift, and is the prelude to bankruptcy, so the large expenditure of the United States on European luxuries, in 1865 to 1872, was a bad sign, and heralded the crisis that followed, and the excessive amount of our imports, from 1874 to 1880, also showed that this country was in a very unprosperous state."

Rarely can be found a more comprehensive and thorough refutation of the false theory that excess of imports over exports necessarily implies an increase of natural wealth or natural prosperity.

JOHN W. HINTON.

OUR BISMARCK ROLL

The Prince Roll of the World !



Perfect Automatic Feed.

Wide Bearings.

Solid Iron Frames.

Best Motion.

Entirely Dustless.

No Slipping Belts.

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No Feed Rollers.

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The Perfection of Simplicity, Strength & Durability.

A Model of Beauty and Perfection.

Protected by Patents.

We do not wish to appear boastful but we desire that the milling public should fully understand the merits of our "Bismarck" roll. Everything considered it is absolutely the best roll made. We do not by this mean to say, that the rolls themselves are any better than others, for rolls like the cutter bars of reapers and mowers, are all about alike, but it is the perfection of our frame; our splendid means of leveling; our adjustments for throwing the rolls open; our superior belt motion; our very wide bearings; the absence of wooden stock hoppers, springs and traps to get out of order; the superior tightening device; the dustless frame and noiseless belt motion that we can justly claim as superior to all others, as they are combined in the simplest possible manner and give to the roll the appearance of beauty and perfection; but the main feature of our roll which stands out pre-eminently above all others, is our

Absolutely Perfect and Automatic Feed,

which is the only perfect feeding device now applied to rolls.

There are others claiming to be automatic, but they are not. In our roll you need not look at the feed from one end of the year to the other, and the material is always spread the entire length of the roll under all circumstances. It does not matter whether you are feeding a peck or forty bushels an hour, the results are precisely the same. It takes the stock as fast as it is made and distributes it evenly, causing an even product under all circumstances. It is the same feed that we use on our purifiers and which we have applied to over Five Hundred other purifiers and many rolls made by other companies.

We are now applying this feed to the Allis, Noye, Livingston and Odell Rolls, the parties paying us liberally for making these changes.

This feed alone, if we had no other advantage, would place our rolls pre-eminently above all others, since a perfect uniform and even feed across the entire width of the roll is of the greatest importance to successful milling.

Notwithstanding these superior points of our roll we are daily traduced and lied about all over the country by jealous and dishonest competitors. They see us marching steadily to the front and have become aware of the fact that we are selling more rolls than any other company in the country, and hence resort to this system of black-mailing which is, we are glad to see, reacting upon them. Parties who visit our shops after examining the superior merits of our three roller break machine and the improved "BISMARCK," almost invariably leave their order. We will further say that we have running in this city a 300 bbl. mill in which we have displaced a line of reduction machines furnished by a leading manufacturer, which machines are now awaiting the junk-shop.

We will also add that we make the largest line of mill machinery of any firm in the country, all under our own patents, and having no royalties to pay, we can make you the lowest possible estimate on a complete mill varying from 60 bbls. to 1000 bbls. in twenty-four hours.

We invite those who contemplate making a change to pay no attention to the false statements of traveling agents, but come and see us, when we think you will be convinced that we have not overstated the fact when we say that our "Bismarck" is the best roll made in the world.

CASE MFG. CO.

Please mention the United States Miller when you write to us.

COLUMBUS, OHIO.

IS HE NOT ENTITLED TO THE \$1000?

In reply to secretary Seaman's circular letter offering \$1000 for a successful invention for packing bran, suitable for use in large or small mills, he has received the following letter which we give below *verbatim et literatim*, minus the date and signature. If he is not entitled to the prize, we would like to know who is. The accompanying cut "shows up" the inventor's bran-packer.

Mellers dena pani minari zde bich vam moch byt drobret drobret napomocnet zee vam posilam hnet jeden plan kdis ho schvalite bude dobre a kdis ho pohodite nekam na smetiste taki dobre, to bi ste potrebovali jenom jednu klapku a provaz l a pres to je as dost engine 10 horse power musel bi byt natu modu jako naposti abi hnal kepredu a naspack ato zavazi nemusi byt tak teski a tes nemusi bit ocelove.

GRAIN ELEVATORS.

Those whose business has led them hither and thither through the various great seaport and lakeport municipalities of the United States must often have cast a curious eye upward toward the elephantine grain elevators they saw towering above them, like Noah's ark, by every city waterside. What bustling, dusty, mysterious structures they seem to be! As to what is going on inside of them—how few know anything about it! People glance at them, beshrew them for their ugliness, have a vague feeling of comfort in the thought that the world can't starve as long as good sterling grain is flowing, like Pactolian rivers, along the railway and canals, and through the bins and shipping-pipes of these great grain-houses; and then they turn away and bestow no more thought upon them.

But that we shall not do. We propose to penetrate into all the mysteries and methods of this great business, and a round, unvarnished tale thereof deliver. Follow in your imagination a bushel of wheat, or Indian corn or rye, from the great golden grain fields of the world in Illinois, Nebraska, Kansas, or Dakota; accompany it on its long journey as it trundles over the glowing rail, or rushes through the yielding water; suppose it reaches the port of Boston to be shipped to some foreign port, say by a steamship of the Cunard or Allan line.

Now, an average freight car holds about twelve tons, or 500 bushels of grain. The car is run up along the side of the elevator building, and the grain is scooped out of each car by two men, who manipulate steam-power shovels, or scoops. Two men can thus empty a car in ten minutes, and can do the work of five men with hand shovels only. The scoops have two handles and are operated by a rope and pulley; the man pulls the rope, which then begins to wind in, and by digging the scoop down into the grain it is easily shoved out of the car. From the car it is conducted by a "leg," or pipe, into huge bins or sunken pits, in the basement of the building; these are square boxes which taper up to a point, or apex, where the elevator chute, or "leg," connects with them. The next thing to do is to weigh the grain, and each car load is weighed separately.

HOW GRAIN IS ELEVATED.

The *modus operandi* is this: Understand that the grain has got to be elevated to a great height and stored, in order that gravity may act on it when it is desired to transfer it to a ship. (And this is the reason elevators are made so high.) Well, now, it costs money to carry anything in a different direction from that which Mr. Principle of Gravitation is traveling; he is a very stubborn old gentleman, and likes to have his own way. Hence, as we have got to weigh that wheat and store it away both, we might as well lift it at once to the top of the building and weigh it there, and then it will be where it is wanted to remain.

Accordingly we have a mighty power-belt of rubber canvas two feet broad. This belt stretches perpendicularly through the building and runs over a pulley at the top. It runs the shafting, which in turn runs the half dozen or more endless traveling belts on which are set, about a foot apart, certain scoops, buckets, or grain-cups, made of thick tin bound with hoop-iron, and holding about a peck each. These revolving buckets pass through a leg or chimney, and dip into the pit of grain, carry it up to the receiving hoppers, where it is weighed by means of a pair of scales which stand away down by the car it came from. (Some car-tracks and canals are constructed directly under the roof of the building, but often they are at one side.) Weighing hoppers are suspended on iron stirrups so as to hang free, and have room for shaking themselves a little when they work, to get rid of the grain in their paunches. Next, the grain passes down one story into the storage bins, which are made of very stout planks, and have conical metal bottoms.

The way the grain gets into the storage bins is this: You have a good many of these bins, you know, hence you let your wheat fall first on a revolving table, placed directly under the weighing or receiving hopper. Around this table are ranged a number of spouts or sluices (numbered) and radiating in every direction into storage bins. A storage bin holds from 4,000 to 8,000 bushels. When it is desired to ship corn it is first allowed to run down again to the pits in the basement, whence it is elevated to the shipping hoppers, in the same way as described for the receiving hoppers. The present arrangement of elevators makes it necessary to thus lift every bushel of grain twice to the top of the building. The shipping hoppers are located just above the receiving hoppers and are the highest in the building. From the shipping hoppers long-hinged pipes conduct it to the hold of the vessel. It should have been mentioned that while the grain is *in transitu* to the shipping hopper, it is cleaned of chaff and dust by a fan-blower.

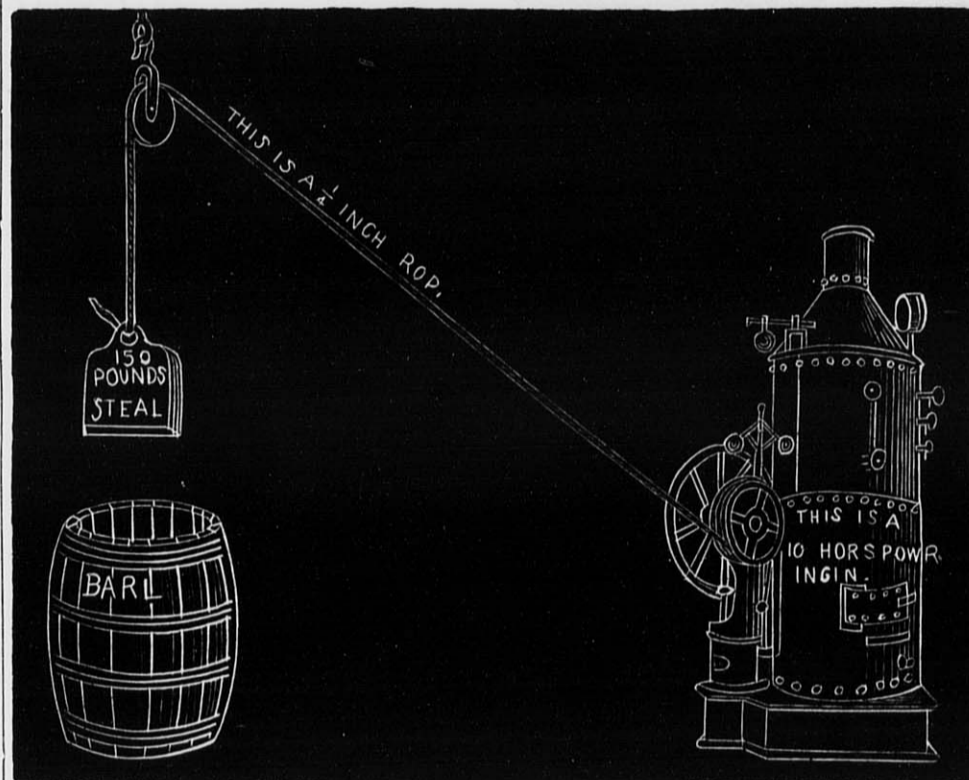
CLEANING AND LOADING.

One of the best methods of cleaning is to let the grain spread out over a sieve, the apertures of which are not large enough to let the grains fall through; then when a blast of air blows through the grain, thus thinly spread, it not only removes chaff and dust, but also the "cheat" or "chess." The shrinkage by fan-blowing is about one per cent., and the loss falls on the shipper. The charge for elevating and weighing grain and storing it for twenty days was formerly 1½ cents per bushel; at present it is only one cent. Charge for storage an additional twenty days is ½ of one cent per bushel, or less. A large shipper may have two or more storage bins

part of Long Wharf, above the T, City Wharf, Mercantile Wharf, and Commercial Wharf, and the Baltimore and Philadelphia Packet Piers. Later, when the through trunk railway lines came, the grain locality remained the same. But it is more particularly to the foreign export trade that we design now to call attention.

The father of all the grain elevators in Boston is the old Merchant's elevator just by the Boston terminus of the North Ferry to East Boston. It was established in 1858 by Alderman S. B. Stebbins. The Boston and Albany R. R. has two elevators in the city—one in East Boston between piers 1 and 6 of the B. & A. terminal grounds, capacity 1,000,000 bushels; and another in Boston proper, on Berkley street, capacity, 500,000 bushels. Another elevator is the Shawmut, on Constitution Wharf, not in operation now, but leased by the Hoosac Tunnel Dock and Elevator Company for use in the case of fire or accident to their immense new docks and elevator in Charlestown.

These huge works, with those of the New York & New England R. R. Co. in South Boston, are now the finest in the city. They are precisely identical in plan throughout, having been constructed by the same architect, Chas. R. McLean. The Hoosac Tunnel Company tried to purchase the territory in South Boston, now occupied by the New York and New England R. R. Co., but were defeated in their intent by the latter road. The Legislature then authorized them to take possession of Hittinger's, Damon's and Gage's wharves in Charlestown, close by the Boston bridge. Here they have constructed three great wharves covered by storage sheds and galleries.



THIS IS A BRAN PACKER, AND "DON'T YOU FORGET IT."

A MODEL ELEVATOR.

In enlarging the piers and excavating for new ones, the remains of ancient wharves were uncovered, and thousands of piles had to be pulled up, and stone walls removed. The dock numbered 5 has been completed within a few months. The elevator has a storage capacity of 600,000 bushels, and so arranged as to admit of a large addition. Five ocean steamships can be accommodated here at once. The great feature of the concern is the system of grain-carrying belts by which vessels can be loaded directly from the elevator.

High up above the sheds of the docks are three long covered galleries running out from the elevator. In these galleries are rubber belts two feet broad, and flat side up. The grain is conveyed on these belts through the galleries and is then shipped into the holds of vessels through the ordinary long-hinged pipes. The momentum of the swift-running belts keeps the grain from sliding off their flat surface, and a corner is turned by the endless belt dumping its load into a sort of pipe which lets the grain fall on another belt traveling at right angles to the former. Electric lights are used in the galleries and sheds, so that work can be prosecuted at night as well as by day.

The Hoosac Tunnel Dock and Elevator Company's works are divided into three distinct portions, each with its separate interests and management, namely, the grain, the freight, and the storage departments. The docks were opened Feb. 1, 1882. The Boston & Lowell R. R. Company talk of building new elevators near their depot if they can get

permission to construct new tracks across Chelsea bridge.

DUST AND INSURANCE.

The interior of a grain elevator is a most dusty-miller, pulverous, be-cobwebbed place, a vast net-work of heavy beams, and cross-braces, and hoppers, and thundering machinery. You step gingerly about among the beams, leaving tracks as you go, beholding with a rueful face the whitened appearance your black clothes are assuming, and feeling in generally much as if you were in your grand-mother's garret on a rainy morning. The dust and chaff ought to be swept up cleanly every day, if the insurance company's rights are respected, for there is danger of the chaffy substance getting into the journals of the machinery and taking fire. Insurance companies require the floors to be swept every day, when they insure an elevator building.

Chicago is the greatest grain market in the world, over 100,000,000 bushels of breadstuffs being received there every year. The city has between fifteen and twenty grain elevators, with an aggregate storage capacity of 12,800,000 bushels. The business is supervised by State inspectors and by a State registrar.

The first grain elevator in Milwaukee was constructed in 1840. There are now nine, with a total storage capacity of 5,330,000 bushels. The elevators can ship over 1,000,000 bushels a day, but can receive only 500,000, owing to the greater difficulty and slowness of elevating the grain. The Milwaukee elevators are almost all owned by the trunk railway lines, which drain the great wheat regions of the Northwest. Duluth, at the head of Lake Superior (population about 8,000), has three elevators, and Odessa, the great wheat city of Russia, on the Black Sea, has 500 granaries.—*Commercial Bulletin.*

THE FOUNDATION FOR PRACTICAL EDUCATION.

The child living with and brought up to his father's trade seems to have an intuitive knowledge of all the peculiarities of the business from the earliest age, and illustrates conclusively the advantage of this early acquaintance with manual knowledge. The best means of furnishing this training to boys and girls, is to familiarize them with it through a systematic use of their playthings in the kindergartens. There is no doubt but this is to be the foundation of practical teaching and to afford a solution of the problem of how to establish practical training for children in America. No child but has a natural bent which is here developed, and none but is the better, has the more practical efficient brain power for the aid given in the manual experience. St. Louis has for years had this foundation for her public schools, and Chicago is gradually coming up to the knowledge of the benefits thus conferred. Plans are already drawn for the erection of the first of the group of buildings on the lot 400x600 feet, bounded by Thirty-third and Thirty-fourth streets and running west from Dearborn street, as a memorial to the late Joseph Armour, and in obedience to certain provisions of his will. The entire group of buildings will be devoted to the manual and technical training of children, and when completed will form one of the largest institutions of learning of the kind in the world.

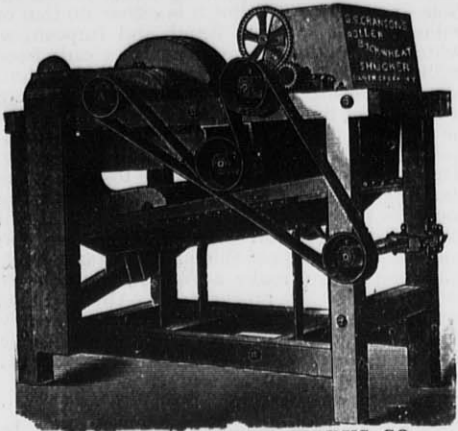
The structure, which has just been commenced, will occupy a space 82 by 126 feet, at the southwest corner of Thirty-third and Dearborn streets, with the main front on Dearborn streets, and will be a chapel and kindergarten. It will be constructed of Chicago pressed brick and brown stone, with some carved panels and enriched mouldings of terra cotta. In the first story are two large rooms for kindergarten work and four large class rooms for manual and other training for children; also a suit of rooms for kitchen-garden training, and the apartments of the superintendent. All of the rooms will be provided with every convenience for the accommodation of children and for the carrying on of the various forms of educational work contemplated in connection with the building. It is intended to have it ready for occupancy by October, 1883.—*Chicago Journal of Commerce.*

Messrs. Reel, Piersol & Co., of Cameron, Mo., the senior partner of which firm is well known to the milling trade throughout the country, having been formerly head of the firm of Reel & Seyler, purifier manufacturers, at Cedarville, Ill., are erecting a 150 bbl. mill at Cameron, Mo., and they have contracted with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for the complete outfit of rolls, bolting chests, and other machinery, including the iron work, and also a 14x36 Reynolds Corliss Engine, and complete steam power outfit. When completed, they intend their mill shall have no superior, for the same capacity, in any part of the country.

BOSTON'S LOCAL TRADE.

The local grain trade of Boston, fifty years ago, as now, was located entirely on the water front. The grain from Philadelphia, Baltimore, and Alexandria came by the Western canals, and was all received in Boston by water. The points of landing were the upper

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INCREASE YOUR PROFITS,
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(Please mention UNITED STATES MILLER when writing.)

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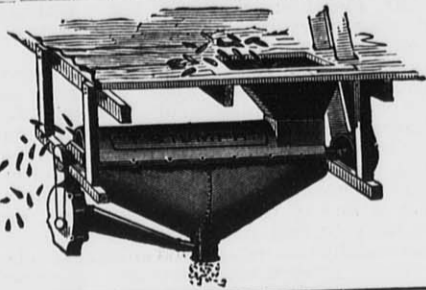
'Triumph' Power Corn Shellers IN USE.

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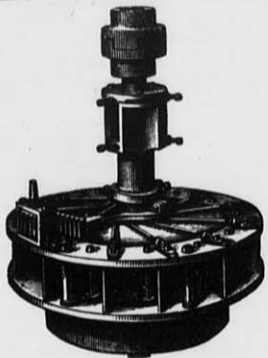
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Fine New Pamphlet for 1882.

The "OLD RELIABLE" with Improvements, making it the Most Perfect
Turbine now in use, comprising the Largest and the Smallest Wheels, un-
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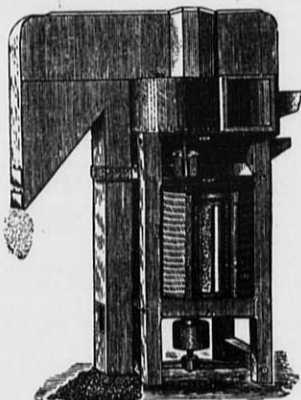
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and Bran Dusters.

Nearly Two Hundred of these Machines are now in oper-
ation in the city of Minneapolis, Minn., alone, and more than
sixty in the city of Milwaukee, Wis. They are also exten-
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15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running
prove its superiority over all other steel castings.
FRANK SHAFTS, CROSS-HEADS and GEARING, specialties.
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Send for catalogue and price list. It will pay you.

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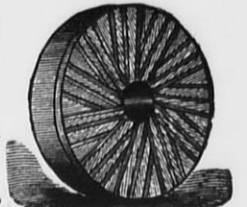
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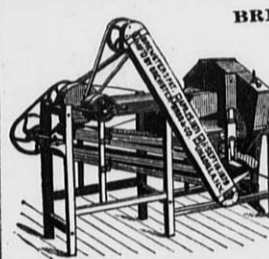
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(Mention this paper when you write.)

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shoulders on seats, and remedying a troublesome defect in other Corliss En-
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The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, sub-
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The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the
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kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.
The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside
parties being licensed.

WM. A. HARRIS, Proprietor.

(Mention this paper when you write to us.)

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is now issuing Policies of Insurance on all approved applications received
so far. The Company has now sufficient members to allow it to increase
the risks on any one Mill from \$1,000 to \$3,000.

All matters relating to Insurance should be addressed to

JOHN SCHUETTE, Sec., Manitowoc, Wis.

(Please mention the United States Miller when your write to us.)

GERMAN AND AUSTRIAN ADULTERATION OF AMERICAN PRODUCTS.

Report by U. S. Consul Geo. C. Tanner, of Liege, Belgium.

There are no people who cry out more lustily and energetically against adulterations than the Germans and Austrians, and yet there are none who indulge in such practices more extensively. Were the full extent of the talents displayed by these nations in adulterations turned into more honest researches, the benefits that would doubtless accrue to them and to science would be hard to define. They can take (and they do it, too), one gallon of our kerosene oil and make one and a half gallons out of it.

If you go into a shop in Germany where this kerosene is peddled, you will be surprised to find the oil, which you have already regarded as possessing but one grade, transformed by the Germans into three grades, and gravely told, when you manifest surprise, that it came from America that way.

The first quality will be found slightly dashed, the second considerably so, and the third so heavily as hardly to be detected by its oldest and most intimate acquaintance.

The science of dilution is carried into everything that is liquid, and adulterations into everything that is solid. Their wines, liquors, and beers, their medicines, and even their mineral waters, are full of all kinds of concoctions and foreign ingredients that are dangerous to life and health. Their sausages and hashed meats are a *mélange* of doubtful ingredients.

Even their woolen goods are adulterated with wool made from rags; the rags are passed through a machine, reconverted into wool, than made into cloth, and largely exported into the United States.

It is well known and abundantly proven that cloth made from such wool retains through all its transformations and rough handling germs of disease, and disseminates them broadcast. A German dying of small-pox, his clothing becomes useless for other purposes than old rags.

The American wearing a suit of clothes made of German cloth thinks little of the risk he is running, or of the condition of the person who has died, or worn at least a part of his suit before him. One must shut his eyes and go it blind when he makes up his mind to buy much that is brewed, baked, or manufactured in Germany, and to be at that reckless point that he does not care what may happen.

The adulterations of this cloth do not stop here. They sandwich in with the wool of rags, and a small proportion of pure wool, a new fiber known as Cosmos, just brought into use as an adulterant, and which is considered by recent investigations to be injurious to health. I have been told by a medical gentleman from Verviers that cloth in which this Cosmos existed, if placed in proximity to a young child, the parts touched thereby would become inflamed, and that it would produce eruptions if it came in contact with the mouth of a child. It is no secret that this article enters largely into the manufacture of woolen cloth in Germany and Austria.

Our flour when found in these countries becomes foreign to such an extent as to be beyond recognition.

An examination of this article will show many adulterations that could not possibly have taken place in the United States, because these ingredients would be more costly with us than the genuine article of the same grade. These ingredients are numerous. I will only mention a few of them: plaster of Paris, baryta, and potato flour. Bread made from this flour is also adulterated.

Our lard is also doctored in many ways, tallow and horse fat being the most conspicuous adulterations.

If evil consequences follow from such wholesale adulterations (as often happens), there is always a means of escape, and the German loses no time in availing himself of it; he sings out lustily that it is in consequence of American adulterations.

There are some things that are so audacious in their character as to puzzle us to know how to treat them, whether grave or gay, and this charge of poison and adulterations coming from such a source is one of these things. It is the clever device of the juggler, who diverts the eye, while he cunningly performs the trick.

The charge that our flour, lard, and other products that we export to those countries are adulterated is palpably false and absurd. Is it probable that we would use adulterations that would cost us more than the genuine article, or would betray itself at first glance? Is it not reasonable to suppose that where those adulterations are found, in a

country in which the adulterating article is cheaper than the genuine article (to say nothing of a common practice), that the adulteration took place in that country?

The United States exports many times the quantity of necessities of life into England that we do to Germany. Belgium and other countries remain steady customers of our pork and flour, and never a word was uttered against either until Germany commenced it. The case is simply this: when our products come into competition with the German home products, the latter suffer considerably, and in proportion to the magnitude of the former, the cry is raised of the "American invasion." It is treated, too, as a real invasion, and all the unfair methods known to warfare are resorted to.

If a choice was left with the German, he would naturally prefer buying an article that he could get at the lowest price, and a government that would try to force a dearer article on him would meet with opposition and be unpopular. In order to do away with this, and to carry out a made-up programme of prohibition, a prejudice must be created against the cheaper article, and hence the song of adulteration, poison and a copy of others falsehoods are raised. It has been proven by experience that protection is not popular in Germany, nor would prohibition be unless the public mind had been worked up to a state to receive it. The first act in this programme has been shrewdly executed and our pork has been driven in disgrace out of Germany by an order of His Majesty the Emperor. Emboldened by his success, the German now turns his attention to the next thing in order, our flour, and its fate is not hard to predict.

The same methods have been resorted to, the same prelude executed, and the same results will follow with this article as with the pork.

These things when allowed to go without protest injure us more than would at first glance appear. These sensational stories of deaths by the wholesale, caused by American adulterations, go from one country to the other with astonishing rapidity, and are accepted as facts, to the great detriment of our commerce, besides creating an impression abroad that there is nothing so monstrous as an American.

Our government, with commendable energy, met the charge brought against our pork, and, at no little trouble and expense, instituted an investigation that resulted in a complete vindication of our hog; but this did not have the effect it was intended it should have, because the edict of prohibition was issued some time subsequent to its publication.

It seems to me that if Germany can prohibit the importation of our products, on a trumped-up and foundationless charge, that we could return the compliment on their woolen goods and other articles, on reasons that can be proven against them by any fair investigation, and in that way bring them to see and repair the injustice they are doing us. If some means are not devised to check this unjust and shameful war on our industries, one after another of our productions will fall as did our pork.

If the effects of this war were felt in but one country we might allow these things to pass, but this is not the case. Any one who will look at statistics will see that the German war against our pork has injured its importation into all other European states. Apart from a commercial view, and other considerations mentioned no one can be so amiable in disposition as not to smart under a system of injustice so doggedly followed up, to say nothing of the methods used.

IMPROVEMENT IN ENGINES.—The *Manufacturers Gazette*, in speaking of hot-air engines, says: "In an improved form of hot-air engines now coming into use, the action is such as to overcome almost all the difficulties encountered under the ordinary system. After the fire is made, the retort becomes heated to a dull red heat, which rise of temperature expands, the small amount of air inside the piston being by this means forced in the air cylinder downward. After this expanded air has done duty, the displacer, which is actuated from the crank, forces the air which has been condensed against the cold sides of the top part of the cylinder back to the hot end of the retort. As the piston performs its stroke, due to the expanded air in the cylinder, a small air valve is kept closed by the pressure; but as the piston makes the return stroke, a small valve on the top of the cylinder opens for a sufficient length of time to permit air to enter the cylinder, to replace any which has escaped through defect in packing. It is therefore not only automatic

in receiving the proper supply of air for expansion, but is also automatic in its lubrication, for whenever this down stroke is made, a small amount of oil is drawn into the cylinder for lubricating the metallic piston—a great advantage in hot-air engines."

WISCONSIN STATE MILLERS' ASSOCIATION.

The annual meeting of the State Millers' Association was held in the parlors of the Plankinton House, Milwaukee, Wednesday, April 10, at 2 P. M. The attendance was not large. The milling press was represented by W. C. Edgar, of the *Northwestern Miller*, Minneapolis, Harley Mitchell, *American Miller*, Chicago, and E. H. Cawker, *United States Miller*, Milwaukee. The meeting was called to order by President Sanderson. S. H. Seamans, secretary of the Association, being called upon for the secretary's annual report, delivered the following:

Mr. President: Since our last meeting, one year ago, very little has transpired within the limits of our own State Association requiring any extended report from me as secretary. The most important matter accomplished is the complete organization of the Millers' Mutual Insurance Company of Wisconsin, which, under the indomitable will of the Hon. John Schuette, Manitowoc, its secretary, is fairly started on the road to success. I have been assured that very few if any of the mutual companies, taking exclusively mill risks, have started out and successfully secured an equal amount of selected business at such small expense. Under Mr. Schuette's careful management we look to see this company take the front rank among the mutuals. Our membership is nominally unchanged. No assessments having been levied for 1882, the question of increase or decrease has not been presented. The "Denchfield Case," which has been presented to you annually for several years past, is still before the United States Supreme Court. It was expected to have been argued in March, but is not yet reached. I am expecting, however, to hear from it every day. As to the result, there would seem to be no doubt, judging from the confidence as expressed by Mr. Harding, and also the late decisions of the Supreme Court in similar cases. The "Process," or "Germ Roller suit," entitled "Downton vs. Yeager Milling Co.," is also before the Supreme Court, and the time for argument is near at hand. While we are not parties to that suit, nor is our association vitally interested in the outcome (having a contract with Mr. Downton whereby our members are protected by a limit as to their liability in case Downton succeeds), the sub-executive committee have kept a watchful eye upon the proceedings of the litigants, and believe it will be properly defended. The results may be briefly stated: If Downton succeeds, the royalty is limited; if he is defeated, we will have no royalty to pay. As your representative in the National Association and upon the sub-executive committee, I have to report that I attended the delegate meeting, which convened at Cleveland Jan. 31, pursuant to the call of the committee issued December 2, last. It was expected that each organized state association would be fully represented at this meeting, as it was considered one of importance to the milling interest of the country. But I regret to say that one association was represented by only a single delegate. This is not as it should be. Milling being one of the largest manufacturing interests in the United States, every year proves more and more conclusively the necessity of a closer alliance with each other. Competition increases, new methods of manufacture are presented, new markets are opened, ways of doing the business are changed, new frauds are brought to the surface, either among applicants for the business or the many crooked patents put forth, which requires and will continue to require, in an increasing ratio, constant watchfulness. The proper place to compare notes and discuss these matters is at the various meetings of the association—state and national. One of the important questions the national sub-executive committee have been called upon to discuss more frequently, perhaps, than any other, without being able to reach a definite decision, and one, too, which was mainly responsible for calling the Cleveland convention, was "to what extent shall the association undertake to defend its members against patent infringements?" This, at first sight, may seem a very simple proposition, but far from it. At Cleveland this matter was referred to a select committee composed of a delegate from each state, to which was added the chairman of the sub-executive committee and your representative. Nearly every member of this committee, aside from the last two were of the opinion that they would be able to return and report in a few minutes; but a session of three hours resulted in a report in leaving the matter just where the old committee had turned it over to a new, except the course which the regular sub-executive committee had adopted was confirmed by specific instructions, by resolution of the entire convention, and read as follows:

"Resolved That the Millers' National Association will defend or settle all patent right suits against its members, except in cases where the national executive committee, after full investigation, decide against the advisability of defending or settling such claims and so notify the member threatened with suit."

Now this resolution suggests two very important considerations. First, to avoid litigation by buying only from responsible parties, who are not only able but will guarantee to protect their purchasers in the ownership and use of the machinery they manufacture and sell. Do not, therefore, for the saving of a few dollars buy any patent machinery of irresponsible parties, and with the machine purchased take the chances of a lawsuit 'thrown in.' Second, members are expected to use ordinary business caution in buying machinery covered with patents. Very little of the machinery is now used in new process manufacture of flour but what is covered 'knee deep' with patents, 99 out of 100 worthless, perhaps, but it takes money to defend them, and the patent office is grinding them out at the rate of nearly 500 per week, of which the various milling machinery comes in for its share. Third, the Association has been

frequently called upon in the past to defend quite a number of very vexatious and costly suits. We find it takes money, money without stint. It seems like pouring water into a rat hole—no end to it. But it is either do that or submit to all sorts of fraud and imposition, which your national committee have only been willing to take in small doses. While it is their aim and desire to keep our members out of trouble, they find one of the best remedies is to be prepared for any emergency, and well fortified with plenty of money in the treasury, which answers the same purpose to us that the standing armies of foreign nations do to the countries they represent. A 'patent shark' will stop and consider well the result before he will make an attack upon able and willing defendants, prepared to make a vigorous fight; they do not admire the prospect. To the end that your national committee might be able to carry out the instructions as expressed in the former resolution, they ordered an assessment for 1883 of 10 per cent. per amount of capacity, which is now in process of collection. While the sub-executive committee are fully authorized to defend any and all suits which they may deem advisable to defend, it will be their aim and desire to prevent their members from getting into trouble, rather than have to defend them after they get into it. The committee have been very busy the past year with matters tending in this direction, which I will briefly notice. It was deemed advisable to employ a patent lawyer, and they are now arranging for such, to watch and report upon all new patents as they are turned out from week to week, which refer in any way to the milling devices and machinery, that we may be kept fully posted in this direction. On dust collectors, which are fast becoming an important adjunct to every well-regulated mill, they are negotiating for good and sufficient bonds, which will be a sure protection to all members who purchase those machines. The agreement is settled and only awaits the few minor details which I expect will be consummated this week, when members will be duly notified. Other manufacturers of milling machinery have expressed a willingness to adopt a like course, believing it is not only for their interest to do so pecuniarily, but a guarantee which every purchaser is entitled to receive. The Ganz and Mechtart patents have created quite a stir, not only among millers, but also among the builders of roller mills, from the fact that they have lately been bought by parties in this country at a big, round price, who no doubt, believe they have secured a valuable prize. The committee are giving the matter such consideration as its importance demands, and members may rest perfectly easy, with the full assurance that their interests are not being neglected. At the Cleveland meeting a premium of \$1,000 was offered for the invention of a successful machine to compress bran in a suitable form for export. This matter having been left in charge of the secretary, he will say that the prospects are certainly favorable, judging from reports so far received, that the successful machine will be forthcoming, which will enable us to put the entire product of the manufactured wheat into the foreign markets on the same basis of freight as flour and grain. The following resolution was adopted at Cleveland, which is at variance with the custom heretofore adopted in this state, and which will require some action at this meeting. The resolutions read as follows:

Resolved, That organized state associations may admit members who will also be members of the National Association, upon payment of an initiation fee of \$5 for each unit of capacity, and the assessments levied for 1883. From unorganized states new members will be admitted direct to the National Association upon the same terms with an additional fee of \$5 for each unit of capacity." Heretofore new members, proprietors of old mills, have been obliged to pay full assessments, equal to the original members. The resolution proposes differently. The annual meeting of the National Association, time or place is not yet finally settled upon, but will be published at the earliest possible moment. If this meeting desires to express any preference in this matter, it will be desirable to assist in determining the location which will best suit the majority.

Respectfully submitted,
S. H. SEAMANS, Secretary.

Mr. Seamans then submitted the following:

TREASURER'S REPORT.
Wisconsin State Millers' Association in account with S. H. Seamans, treasurer:
1881
April 11. By balance on hand..... \$858.51
1882
April 12. For papers and printing..... \$ 2.00
" 12. Millers' National Association..... 200.00
Feb. 3. Expenses to Cleveland convention..... 40.03
April 2. Riverside Printing Company, books, etc..... 13.25
Secretary's services..... 250.00
April 10. Balance on hand..... 353.23
\$ 858.51
S. H. SEAMANS, Treasurer.
Amount on hand..... \$853.23
Collected on 141½ units capacity, assessment No. 9..... 767.60
Total on hand this date..... \$1,060.73

On motion of C. A. Manegold, the above reports were received and adopted. The recommendation of the committee of the National Association regarding the admission of members was adopted. The committee appointed at the last meeting of the Association, to take action looking to the drafting of a bill against gambling and dealing in options and grain, asked for, and given further time, pending the decision of a case now before the Supreme Court. Two letters pertaining to bills of lading were presented and read by the secretary. These letters were published in the *UNITED STATES MILLER* for April.

Upon motion a committee of three, to act on the matter of a more equitable bill of lading, was appointed by the president, and instructed to report to the National Association. The committee selected was Wm. Sanderson, C. A. Manegold and F. Schleisinger. The first quarterly report of the Milwaukee Mutual Insurance Co. for the year 1883 was presented, same showing there to be 200 policies in force, with a total risk of \$354,500. The total amount of loss paid during the quarter was \$3,066.58. Total assets of the company \$70,657.10.

Following this came the election of officers. Upon motion the present officers were unanimously re-elected by acclamation. After tendering a vote of thanks to the Plankinton House for courtesies extended, the meeting adjourned.

FOR THE NEAR SIGHTED.

Occasionally a Near Sighted Miller is encountered who can read nothing but "Loud" Print.

For his Benefit as well as **All Others** interested in the use of Roller Mills, it is eminently proper to say that the

STEVENS ROLLER MILLS

AS MANUFACTURED BY

THE JOHN T. NOYE MANUFACTURING CO.,

BUFFALO, N. Y.

have, by their Superior Excellence of Construction, embodying all the Most Recent and Modern Improvements of Any Merit, and Perfect Adaptation to All the Requirements on any

CLASS OF WHEAT,

Legitimately earned the name of being the

BEST IN THE WORLD.

Estimates given for Mills of any Capacity, from 20 to 20000 Barrels in twenty-four hours. Systems Simple or Elaborate. Results Guaranteed. Mills Remodelled in Short Order. Correspondence solicited.

Send for the Handsomest and Most Complete Roller Mill Catalogue ever issued.

[Mention the United States Miller when you write to us.]

[The following article which was written for *The Miller*, London, by a milling engineer, contains many points of interest and much information of value to young American millers who have a desire to learn. The publisher of the UNITED STATES MILLER has endeavored to obtain an article something similar to this from a well known American milling engineer, but as he has been unable to do so, he believes he renders a valuable service to his readers by republishing from *The Miller*, London, the article as below. The article was prepared with a view to assisting millers to pass the examination for admission to the ranks of English journeyman millers.]

STUDIES FOR YOUNG MILLERS.

Milling Technology, with Suggested Questions for Examination therein.

1. **Milling.** Corn or flour milling is, strictly speaking, a mechanical process, or rather a series of mechanical processes. But milling, thus looked at as a branch of applied mechanics, is consequent on the facts relating to supply, and is determined, so far as intention is concerned, at every stage by the relative good values of the various products into which the cereal operated upon is subdivided; whilst the physical properties of the different portions of the wheat berry furnish the limits within which these intentions are carried out. Thus milling, in its general signification, is primarily divisible into three divisions of the supply, manufacture, and the physical and chemical properties of the wheat operated on.

2. **Supply.**—Various questions, at once interesting and practically important, relate to supply, the sub-heads being Variety, Transit, and Storage.

3. **Variety.**—The variety of the supply at any given place depends upon the ratio of production to consumption, not only at the place in question, but on that ratio in every other wheat-producing country. On the assumption of perfect distribution, the diversities in the above-named ratio tend to the following result:—In every country in which the production exceeds the consumption the whole of the wheat will be native-grown. In every country in which the consumption exceeds the production, the deficiency of the latter will be made up from every country in which more is grown than consumed, in the proportion furnished by each country to the total quantity exported from all countries. How far this condition is realized in practice, and what are the causes—as transit, import and export duties, &c.—which hinder its realization in every place, are subjects which ask for satisfactory explanations.

a. What countries are there, which, under average circumstances, import wheat?

b. What countries, under average circumstances, export wheat?

c. In what countries does production (on an average) equal consumption?

d. What are the principal divergent characteristics of wheat?

e. Correlate these divergences, which depend on *habitat*, with the wheat-bearing regions producing them.

f. Indicate the probable increase or decrease in the importation and exportation of the above-mentioned countries, giving the causes leading to such increase or diminution.

4. **Transit.**—The carriage of wheat from place to place is interesting chiefly in the following ways: Methods of conveyance and handling; the cost of transit; and the effect on quality during transit.

a. What are the principal ports of importing and exporting countries?

b. What is the relative cost of transit from the exporting countries to the United Kingdom?

c. Explain briefly the route taken and the method of handling of grain from one of the American States (Oregon for instance) to the United Kingdom.

d. What is the effect on quality of a sea-voyage?

e. Give the import and export duties charged by the several countries.

f. State briefly the effects of these duties on the corn trade of any given country.

5. **Storage.**—Under this head will fall the manner of storage, its effects on quality, and the mensuration of wheat in bulk.

a. What is the specific gravity of wheat in bulk?

b. Given the length, breadth, and depth of a corn receptacle to determine its capacity in imperial quarters, and also the weight of its contents when full.

c. In what manner does storage affect the quality of wheat?

d. How may the deterioration consequent on storage be reduced to a minimum?

6. **Manufacture.**—The mechanical processes of milling pre-suppose the principles of pure mechanics. Machines used in milling are actuated by motors, and the power is transmitted by means common to all machinery. Where possible, mechanical questions should relate to special milling machines, but with regard to the principles com-

mon to all machinery, independent of any special function, the ordinary methods of examination will suffice. It will be a question as to what extent this should be carried; but it would seem that for the present, and until the increasing stimuli to study mechanics have had time to operate, purely mechanical questions should, except so far as is necessary to illustrate special milling machinery, be included very sparingly, at least in the preliminary examinations.

7. **Motors.**—Motors being classified according to the immediate source of the energy actuating them, as wind, water, and steam, the mode in which the energy exists prior to its conversion in the motor, and also the manner of its transformation, should be brought out, as also the relative advantages and disadvantages of the different motors for the special purposes of flour milling with respect to cost, locality, uniform emission of power, etc.

a. Explain briefly the mode of energy and its successive transformations as existing in the steam engine.

b. Explain the use of the fly-wheel on the steam engine.

c. Estimate the cost per 20-stone sack of flour of a steam motor (stating in question the number of breaks).

d. What is the immediate source of energy utilized in water motors?

e. What differences are there in this respect in the cases of overshot, breast, undershot, and turbine wheels?

f. What are the advantages and disadvantages of motors actuated by wind, water, and steam respectively?

8. **Machinery.**—The transmission of power by machinery is the principal thing to be considered under this head. Each piece of moving machinery has some function determined by its connection with fixed and other moving pieces. The shape of the connected surfaces, the effect of their connection on the energy transmitted, and the effect of their connection with other moving pieces upon the variation of the two factors, velocity and intensity, define the function of the several pieces.

9. **Technology.**—The technology of milling proper should be taught mainly by discrimination based on function. With regard to classes of machinery this is apparent. The leading divisions are the preparation, reduction, and subsequent separation of the grain and its products; and the machinery used in these several processes will naturally fall under the same heads.

10. **Preparation.**—Under the head of preparation is included cleaning, the elimination of damaged grains, sizing, heating, &c. Separation can only take place through some physical differences existing between the good grain and the substances which it is sought to remove. When these differences are considerable it matters not how many kinds of foreign substances there may be; or what differences these various substances exhibit; a combined apparatus can be easily constructed to eliminate all at one operation. In proportion as the physical differences on which the separation is based become less, a more elaborate, or at least more specialized, machine—one constructed with a view to that construction alone—becomes necessary.

a. Give a brief explanation of the objects sought to be attained in the preparation of wheat.

b. What are the characteristic effects on the resulting flour of unremoved smut balls, garlic seeds, cockle seeds, and sprouted grains?

c. What are the consequences of milling damp wheat?

d. What are the advantages said to be gained by those who advocate heating the wheat previous to reduction?

e. Explain the rise to the surface of the lighter grains and substances upon a general agitation of a mixed bulk.

f. What are the objections to washing wheat?

11. **Reduction.**—The reduction of wheat is complicated by the circumstances that the resulting particles, or portions of the berry, are required to possess certain distinctions as to size, as on this the desired quality and also the subsequent separation is based. Each distinct kind of machine gives rise to a variety of scientific questions. Millstones and rollers are the principal *kinds* of reducing machines. The essential points to be considered are the shape of the acting surfaces (there being two in co-operation), their relative motions, and the irregularities of the surfaces of revolution, whether due to the nature of the material, or produced by art.

a. Explain in what the principal problem of grinding or reduction in milling consist.

b. Supposing this reduction to be accomplished, by millstones, describe the mechanical action of the stone on the wheat.

c. Explain the development of heat in the millstones.

d. What is meant by "standing balance," and what by running balance in millstones?

e. Describe an adjustment which will affect the running balance, but not the standing balance.

f. What is the effect on a displacement of a running stone, in running balance, when the point of suspension is at, above or below the centre of gravity of the stone respectively?

g. What effect has more or less draft in the furrows on the course of the feed through the stones?

h. Describe the forces acting on a particle of feed during its progress through the stones.

i. What is the principal difference between the mechanical action of smooth rollers and millstones?

j. What alterations in the manufacture and motion of rollers cause their action upon the feed to approximate to that of millstones?

k. What are the relative advantages claimed for porcelain and chilled iron, as material for rollers, respectively?

l. What are the relative advantages claimed for rollers and millstones, respectively?

12. **Separation.**—Separation is here, as elsewhere, based on difference, the differences utilized being those of size and density.

a. Into what products is it desirable to separate the meal as it comes from the stones or rollers?

b. In what respect does separation in modern processes differ from the simple operation following low grinding so long in practice?

c. Explain the principle of action of a middlings purifier.

d. Explain the mechanical conditions under which separation based on size can take place.

13. **Chemical composition and physical properties of the wheat berry.**—Milling from its chemical side asks, "What are we to do?" from its physical side, "How are we to do it?" It is evident, then, that the former, in so far as it affects practice, precedes the latter—hence its importance. This question of desired chemical constitution in flour concerns the miller and the baker equally—the miller so as to know how to produce it; the baker, because of its importance with reference to the further changes to be made, and the result to be aimed at in the loaf. It is, however, for those undertaking the chemistry of bread making to indicate the chemical and other characteristics desired in the flour, and then for those engaged in milling to meet the requirements as best they can.

a. Give the principal differences of structure of which the wheat berry consists.

b. Which of the above portions is it desirable to retain in the best flour?

c. Give the organic chemical compounds to which the different structural portions are their properties.

d. Give the ultimate chemical substances which predominate in the different portions.

e. Describe the mechanical properties of the several portions which render the desired separation possible.

f. What is the chemical distinction between hard and soft wheats, and to what is this difference due?

g. In what manner does sprouting alter the chemical composition of wheat?

h. State concisely the contentions of those who advocate, and of those who oppose, the use of whole-meal bread.

14. **Explosions.**—Flour dust when diffused in air is highly inflammable, and the products of combustion occupying many times the space (under the same pressure) taken up by the air and dust previously, an explosion takes place.

a. To what chemical constituents of wheat is the inflammability of flour dust due?

b. What chemical alteration takes place on combustion?

c. To what is it owing that the combustion of flour dust causes an explosion?

d. What is the measure of the intensity of an explosion under the most favorable conditions?

e. What causes render explosions more frequent now than formerly?

15. **Storage.**—Grain is generally stored in granaries by heaping it in layers of certain thickness on well ventilated floors, or it is put in specially adapted receptacles. In Hungary, Spain and Russia grain is often stored in

large pits cut into the rocks (silos), or also in dry earth pits. In India and similar grain-producing countries the natives store their grain in earth pits.

a. The specific gravity of wheat in bulk varies according to its species, its dryness, and its quality. The weight of a bushel of wheat varies from 52 lbs. to 62 lbs., and its average weight is 60 lbs. A bushel contains 2,117 cubic inches, and if filled with water would weigh 80 lbs. Therefore the average specific gravity of wheat *in bulk* is only = 0.75, although the *absolute* specific gravity of wheat is greater than that of water (about 1.5). Therefore, as one cubic foot of water weighs 62.425 lbs., one cubic foot of wheat only weighs 46.82 lbs. *Note.*—The American bushel is smaller than the English bushel; it only contains 1,848 cubic inches, and only holds 66.7 lbs. of distilled water.

b. In order to ascertain the capacity of a receptacle in imperial quarters, and the weight of its contents when full, for a given length, breadth and depth, find the contents of the receptacle in cubic feet and divide by 10.2638, roughly 10½ cubic feet (the capacity of an imperial quarter in cubic feet).

The weight of the contents can then be found either by multiplying the number of cubic feet with 46.82 lbs. (the weight of a cubic foot of wheat), or by multiplying the number of imperial quarters with 480 (the weight of a quarter of wheat.)

The following rules may be employed for finding the contents of the receptacle:—

1. **Cylinder or prism with plane parallel ends.** Multiply the area of either end by the perpendicular distance between the end planes.

2. **Rectangular prism with plane ends, not parallel.**—Measure the sectional area on a plane perpendicular to the axis; multiply it by the half-sum of the lengths of a pair of opposite edges.

3. **Triangular prism, with plane ends, not parallel.**—Measure the sectional area at right angles to the axis; multiply by the third-part of the sum of the lengths of the three edges.

4. **Cone or pyramid.**—Multiply the area of the base by one-third of the height, measured perpendicularly to the plane of the base.

5. **Sphere or ellipsoid.**—Multiply together the three axes of an ellipsoid (or take the cube of the diameter of a sphere); then multiply by the factor $\frac{3.1416}{6} = 0.5236$

6. **Frustrum, prismoid, spherical and ellipsoidal segments and zones.**—The following rule is applicable to—

I. A frustrum or part cut off from a cone or pyramid by a plane parallel to the base.

II. A prismoid, or solid, bounded by two parallel quadrangular ends and four plane faces, parallel or not.

III. A segment cut off by one plane, or a zone cut out by a pair of parallel planes, from a sphere or an ellipsoid (barrel).

And generally to any solid bounded endwise by a pair of parallel planes, and side-wise by conical, spherical, or ellipsoidal surface, or by any number of planes.

Rule.—To the areas of the ends add four times the area of a cross section made by a plane midway between and parallel to the ends; divide the sum by six and multiply by the perpendicular distance between the two parallel ends.

Example: A quantity of wheat is stored up on a mill floor in the shape of a frustrum of a square pyramid. Its top surface is 20 ft. by 20 ft., and its bottom surface 24 ft. by 24 ft.; its depth is 3 ft.; what are its contents in imperial quarters, and what is the weight of the wheat?

The area of the mid-cross-section is 22 ft. x 22 ft. = 484 square feet; the area of top surface is = 20 ft. x 20 ft. = 400 square feet; and the area of bottom surface is 24 ft. x 24 ft. = 576 square feet.

Therefore:
area of top surface + area of bot. surface + 4 times mid. cross sec. x per. dis. = cont.
400 + 576 + 4 x 484 x 3 = 1,456 cubic feet.

One imperial quarter contains 10.2638 cubic feet; therefore, 1,456 cubic feet is equal to 141.86 quarters. One quarter weighs 480 lbs.; therefore the weight of the wheat is = 68,092 lbs. = 30 tons 8 cwt.

Example: The inner diameter of a flour barrel is 2 ft. at top and bottom, and its largest diameter is in the middle = 2 ft. 6 in. Its height is 3 ft. The areas of top and bottom surface are = 3.1416 square feet each. The area of mid-section is = 4.9087 square feet, and we find

$\frac{3.1416 + 3.1416 + 4 \times 4.9087}{6} \times 3 = 12.959$ cubic feet.

c. The influence of storage on the quality of wheat is twofold—first, deterioration by rats, mice, insects, &c.; and second, chemical

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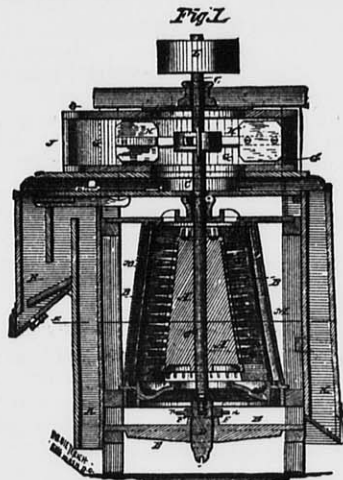
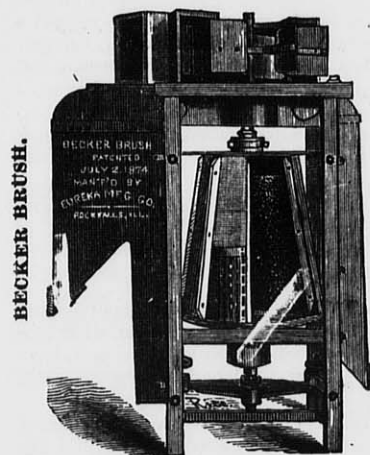
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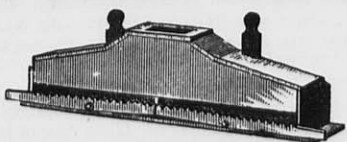
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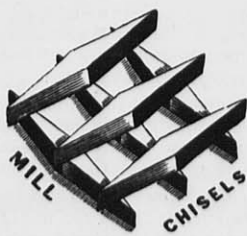
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deterioration by action of atmospheric moisture. The latter deterioration is the most injurious one, and it is therefore of the utmost importance to keep stored-up grain as dry as possible, in order to prevent all fermentative and fouling action, which would turn the wheat musty and mouldy. So far as moist wheat or fresh harvested wheat is concerned the influence of storage, if properly managed, may be said to be beneficial, because it causes the superfluous moisture to evaporate, and thereby renders the wheat fit for grinding.

d. The deterioration resulting from storage may be reduced to a minimum by various means. The most effective arrangement is probably that of storing the wheat in cast iron or wrought iron air-tight receptacles, and to exhaust them by means of exhaust fans. By thus withdrawing the oxygen, all fermentative and fouling action and the growth of fungus is checked, if not made impossible; and also vermin and insects cannot exist in such evacuated receptacles.

Another means for diminishing deterioration from storage is continual motion of the grain and good ventilation with dry air.

Grain stored on floors in ordinary granaries, therefore, requires frequent turning. The granary should not be situated in the neighborhood of watercourses or large trees, so that only pure air is allowed to pass through the floors. A constant draught should be maintained, except in wet weather, and plenty of light should be provided, because dry air and light keep the wheat from getting musty. Fresh harvested wheat contains, as a rule, too much moisture, and it must, therefore, in the beginning, be heaped only in thin layers. It requires frequent turning, and as it becomes gradually drier it can be stored in thicker layers.

In order to avoid this turning by hand, granaries have been specially constructed so as to keep the grain in continual motion.

An arrangement constructed by Mr. Conink of Havre, consists of a series of strong perforated floors, which are arranged in such a manner that the grain in passing through the floors forms a number of air spaces. These air spaces are in communication with the outside air or with an exhaust fan, and through them a continual ventilation takes place. As the wheat is drawn off at the bottom of the store, the grain moves gradually downwards. By putting a worm in the bottom of this grain receptacle and feeding with the same an elevator which delivers the grain again to the top, a continual motion can be kept up in the grain, which not only prevents deterioration by insects but also keeps the grain dry and sound.

A somewhat similar arrangement has been constructed by Huart of Cambrai, which is in use in several large Continental mills. It consists of ordinary large wheat hoppers, with a worm at the bottom and an elevator to keep the contents of the hopper in motion. The perforated floors and the air spaces are omitted, but an exhaust fan is arranged for causing a strong draught of air to pass through the wheat.

Another arrangement for circulating and ventilating grain is that of Valery, who employed a large wooden drum divided into a number of compartments. The outer mantle of this drum is perforated so that the grain will drop from the wheat hoppers into the upper compartments of the slowly revolving drum. When these compartments reach their lowest position the grain gradually runs out through similar perforations into a wheat worm lying below the drum. Inside the large drum is a smaller one, also perforated, which is in connection with an exhaust fan, so that the grain is well ventilated. The large drum is carried by small friction rolls, and is slowly revolved by means of a ratchet on a small crank-shaft. If the drum would be made with a shaft through its centre, instead of resting on friction rolls, it would be made self-acting.

When grain is stored in earth pits, or in silos, it is important to put the dry grain in the dry pit and to prevent the access of moisture and air. This can be done by covering the filled pit first with straw and next closing it up with a good layer of earth. Or some burnt lime is spread on the surface of the grain, whereby the latter will be caused to grow and thus form a water-tight crust.

The best silos are those cut out of the dry, close rock, or those of masonry which have been covered with cement; but those which have been dug in clayey soil and have been afterwards dried, (burnt) have been found to be well suited for their purpose.

This method of storing grain in pits is cheap; it does not require any manual-labor, which

is unavoidable in granaries, but when opened the pits must be emptied at once.

(To be continued.)

NEWS.

JOSEPH WILLMAN, Flint, Mich., lately changed his mill to the Case System of gradual reduction.

THE CASE MFG. CO., Columbus, O., are furnishing W. H. Starr, Brock, Neb., with a line of rolls, etc.

THE CASE MFG. CO. have telegraphic orders for six No. 1 double purifiers from J. K. Mullen, Denver, Col.

J. GRIB & CO., Louisville, O., will start up their mill in a few days on the Case system of gradual reduction.

H. C. POTTS of Lancaster, Ky., has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a pair of Stevens' rolls.

THE CASE MFG. CO., Columbus, O., are furnishing C. Harvy, Wilber, Neb., with a line of rolls, purifiers, etc.

THE CASE MFG. CO., Columbus, O., have lately shipped Barrett & Son, Spring Valley, Ohio, one Case centrifugal reel.

THE CASE MFG. CO., Columbus, O., have shipped to Kloose & Bradford, Creston, Iowa, a line of rolls, purifiers, etc.

THE CASE MFG. CO., Columbus, O., have the order of Sloss & Son, Traer, Iowa, for one "Little Giant" break machine.

M. H. MOORE, Columbia, Lancaster, Co. Pa., has ordered a pair of Stevens' rollers of the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

THE SUMMER MILLING CO. at Vincennes, Ind., have ordered additional Stevens' rolls of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

THE CASE MFG. CO., Columbus, O., have taken the order of R. Cochrane, Westfield, Mo., for a full line of breaks and rolls.

W. A. BAER of Ligonier, Pa., has placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill.

L. BUCHLER, Tamaqua, Pa., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a double Stevens roller mill.

THE CASE MFG. CO., Columbus, O., have the order of the Richmond City Mill Works of Richmond, Ind., for one 4-roller "Bismarck" mill.

WERNER MILLER & CO., Wright City, Mo., have lately started up their mill on the Case System of gradual reduction, with the best of results.

WINEGAR BROS., Montgomery City, Mo., have ordered from the Case Mfg. Co., Columbus, O., one 9 x 18 bran roll with patent automatic feed.

THE JNO. T. NOYE MFG. CO. of Buffalo, N. Y., will fill an order for a double Stevens' roller mill for E. Stratton & Son of Salem, Columbiana Co., Ohio.

THE CASE MFG. CO., Columbus, O., have taken the contract of Wm. Hamilton, Flint, Mich., for a line of breaks, scalpers, rolls, centrifugal reels, etc.

THE RICHMOND CITY MILL WORKS, Richmond, Ind., have placed their order with the Case Mfg. Co., Columbus, O., for a line of break machines.

SMITH, HILL & CO., Quincy, Ill., have ordered from the Case Mfg. Co., Columbus, O., a line of break machines for the mill they are building at Clayton, Ill.

M. E. MOORE, Waterville, Kans., has lately started up his mill on the Case System of gradual reduction, with good results and the best of satisfaction.

EVANS, INMAN & CO., Blairsville, Pa., have ordered of The Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Rounds' sectional roller mill and other Stevens' rolls.

MESSRS. A. DEHNER & CO., of St. Louis, Mo., have ordered of Messrs. Edw. P. Allis & Co. a 20x42 Reynolds Corliss Engine for one of their customers.

THE CASE MFG. CO., Columbus, O., are furnishing J. F. Katterjohn, Boomville, Ind., with one break machine and scalping reel, making three separations.

GEO. & W. C. PAGE of Mumfords, N. Y., has salted an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a pair of Stevens' rolls for low grade grinding.

THE CASE MFG. CO., Columbus, O., have the order of Underhill & Rommell, Manchester, Mich., for one 4-roller "Bismarck" mill, with patent automatic feed.

H. GATES of Bryant, Clinton Co., Ia., has lodged an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill with Stevens' rolls.

H. V. LINE, E. Springfield, Pa., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill and a double Stevens' roller mill.

JNO. WEBSTER of Detroit Mich., has filed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for Pfeiffer & Traut, Mt. Vernon, Ind., for four pairs of Stevens' rolls.

SCHAAD, MANER & SEITER, Petersburg, O., have lately remodeled their mill, putting in the "Case" System of gradual reduction; they expect to be running in a few days.

STONER & KERLIN, Chambersburg, Pa., have ordered of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., a Rounds' sectional roller mill, and two single Stevens' Roller Mills.

B. F. GUMP of Chicago, Ill., in connection with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., is putting in a machine to regrind and recorrugate chilled iron rolls.

THE NEENAH WATER POWER CO., of Neenah, Wis., has just been incorporated. The incorporators are J. L. Clement, Edward Smith, J. R. Davis and J. A. Kimberly.

CHAS. HUBER, the St. Louis milling expert, has sent in to the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., an order for Chas. Seely, Crete, Neb., for a double Stevens' roller mill.

THE St. Louis, Mo., milling engineer, Chas. Huber has ordered of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for P. Heiss & Son, Centralia, Ill., two single Stevens' roller mills.

J. P. SMITH of Mankato, Minn., the popular representative of the Stevens' roller mills, has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Rounds' sectional roller mill.

THE CASE MFG. CO., Columbus, O., have taken the contract of J. A. Nagle, Lodi, O., for breaks, rolls, scalping reels, etc., for a full gradual reduction mill on the Case system.

M. E. CLEARWATER of Mattewan, N. Y., has ordered of The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., a four-break Rounds' sectional roller mill, and a pair of Stevens' rolls in addition.

SHULER & Co. Minneapolis, Minn., the busy millwrights, have directed the Jno. T. Noye Mfg. Co., Buffalo, N. Y., to forward a Stevens roller mill to Everett & Auchenbaugh, Waseca, Minn.

MESSRS. EDW. P. ALLIS & CO., of the Reliance Works, Milwaukee, Wis., are furnishing a 14x36 Reynolds Corliss Engine, with boiler, pump, heater and everything com-

plete, for the new mill of Messrs. Piersol & Co., Cameron, Mo. The mill is also being built by Messrs. Allis & Co., and when completed will have a capacity of 125 to 150 bbls. of flour in 24 hours.

THE CASE MFG. CO., Columbus, O., are the only firm in the country that manufacture, under their own patents, a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc.

WM. R. DRILL & SON, London, Eng., have cabled The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for the immediate shipment of two Rounds' sectional roller mills. The order will be promptly filled.

MESSRS. BAUFORD & CO., of Midway, Pa., have lodged an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for twelve pairs of Stevens' rolls, for the new mill they are building at that point.

THE CENTENNIAL MILL CO., of Avoca, Iowa, recently ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., a 14x36 Reynolds Corliss Engine, complete, for their flouring mill at Avoca.

THE CASE MFG. CO., Columbus, O., have taken the contract of J. M. & H. C. Allen, Grafton, Ill., for breaks, rolls, purifiers, scalping reels, etc., for a full gradual reduction mill on the Case System.

JNO. WEBSTER, the famous milling expert of Detroit, Mich., has instructed the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., to furnish J. & S. Emison of Vincennes, Ind., with an additional double roller mill.

AGAIN an order from the Pacific coast for Stevens' roller mills has been telegraphed The Jno. T. Noye Mfg. Co. of Buffalo, N. Y. This time it reads fourteen pairs, and will, as usual, be promptly filled.

A. A. CHATEAU, Deadwood, D. T., has filed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., through Chas. Huber, St. Louis, Mo., for a double Stevens' Roller Mill for flouring purposes.

JNO. WEBSTER of Detroit, Mich., has scooped an order for fourteen pairs Stevens' rolls for the mill of Eckert Bros. at Jasper, Ind. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will promptly fill the order.

MESSRS. HAGGERTY, HUNTER & CO., of Peoria, Ill., are remodeling the mill of the McHenry Milling Co., at McHenry, Ill., and are putting in twelve pairs of Allis' rolls in Gray's Noiseless Belt Frames.

MESSRS. EDW. P. ALLIS & CO., of the Reliance Works, Milwaukee, Wis., lately received an order for a 14x42 Reynolds Corliss Engine, complete, for the Dorset Pipe and Paving Co., of Chicago, Ill.

THE CASE MFG. CO., Columbus, O., have taken the contract of S. R. Hackman & Son, Eagle City, O., for breaks rolls, purifiers, scalping reels, etc., for a full gradual reduction mill on the Case system.

THE CASE MFG. CO., Columbus, O., have taken the contract of I. H. Jones, Jamesport, Mo., for breaks, rolls, purifiers, scalping reels, centrifugal reel, etc., for a full gradual mill on the Case System.

MAUNTEL, BERGES & CO. of East St. Louis, Ill., has ordered a double Stevens' roller mill of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., they will fill the order which was taken by Chas. Huber of St. Louis, Mo.

MESSRS. VAN EPPS & CO., of Fremont, Ohio, have recently placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for four pairs of the celebrated Allis' rolls in Gray's Noiseless Belt Frames.

MESSRS. BABCOCK & WILCOX CO., of Chicago, Ill., recently placed an order with Messrs. Edw. P. Allis & Co., of Milwaukee, for 22x48 Reynolds Corliss Engine, for the Economist Plow Co., of South Bend, Ind.

B. F. GUMP, the able representative of the Stevens' Roller Mills in Chicago, Ill., has bagged an order from F. J. Maunck, Dallas, Ill., for two mills. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will fill the order.

THE CASE MFG. CO., Columbus, O. have been awarded the contract of Swift & Co., Ann Arbor, Mich., for breaks, rolls, purifiers, scalping reels, etc., etc., for a 300 bbl. gradual reduction mill on the Case System.

THE CASE MFG. CO., Columbus, O., have the order of the Maple City Milling Co., La Porte, Ind., for a line of breaks, rolls, scalping reels, centrifugal reels, etc., for a gradual reduction mill on the Case System.

THE Riest Mill Co. of Williamsville, N. Y., have determined to put in more rolls, and have lodged an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill with other Stevens' rolls.

DEANINGER BROS., Adrian Mich., have lately remodeled their mill, known as "Deaninger Bros. Old Red Mill," to the Case System of gradual reduction. They are now running with the best of results and satisfaction.

L. O. RATHBUN, Rochester, N. Y., has determined to accept the exclusive handling of the Stevens' roller mills, and has placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for a Rounds' sectional roller mill.

THE CASE MFG. CO., Columbus, O., have furnished A. F. Ordway & Son, Beaver Dam, Wis., with an additional pair of rolls, 9x18 scratch, with patent automatic feed, for the mill they are now building at Fond du Lac.

THE GREAT WESTERN MFG. CO., Leavenworth, Kans., have lately placed an order with The Case Mfg. Co., Columbus, O., for some machinery to go into the mill that they are building for J. W. Graham, St. Joseph, Mo.

THE CASE MFG. CO., Columbus, O., are furnishing Allen & Co., Lenox, Iowa, in addition to the machines they have already shipped them, one Little Giant break machine and scalping reel making three separations.

THE CASE MFG. CO., Columbus, O., have taken the contract of Armstrong & Co., Fayette, Mo., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a gradual reduction mill on the Case System.

AND now comes Heack Bros. of Tecumseh, Mich., saying that in order to keep up with the times The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., must send them fourteen pairs of their celebrated rolls. The said company will do it.

W. E. TEUCH, Chippewa, Ont., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill with Stevens' dress, as well as additional machinery to change his mill from stones to rollers.

THE CASE MFG. CO., Columbus, O., have been awarded the contract of Miller & Co., Augusta, Ga., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, &c., for a full gradual reduction mill on the Case System.

THE SHEBOYGAN MFG. CO., of Sheboygan, Wis., lately placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a 22x48 Reynolds Corliss Engine complete, to run their factory at Sheboygan.

SOMETHING less than a thousand roller mill manufacturers have extensively advertised that they have secured the order of Gilbert & Barber, Geneva, Wis., for the building of their new mill; but Mr. B. F. Gump of Chicago, Ill., writes us that he has taken the contract himself and proposes to do it himself; we believe him. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will furnish twelve pairs of their celebrated Stevens' roller mills for the purpose

J. F. SCHOELKOPF, a well-known miller, has been elected president of the Buffalo Board of Trade.

BURNED—April 10.—Alex. McMullen's mill at Sandwich, Ill. Loss, \$15,000. Insurance, \$7,000.

Stilwell & Bierce Mfg Co. have just shipped to Spinks & Berkeley, Potomac, Ill., one 9 x 18 Odell roller mill.

McMILLAN's elevator at Winnipeg collapsed recently, and 60,000 bushels of wheat were spilled out on the ground.

Jno. Heabler & Bro., Attica, O., have ordered a double Stevens' roller mill of The Jno. T. Noye Mfg Co., Buffalo, N. Y.

THOS. BROWN, Sr. Toledo, O., has lodged an order with The Jno. T. Noye Mfg Co., Buffalo, N. Y., for four pairs of Stevens' rolls.

Stilwell & Bierce Mfg. Co., have orders from Eisenmeyer & Co., Little Rock, Ark., for one 9x24 double Odell roller mill.

C. Fogarty, Junction City, Kas., has placed an order with The Jno. T. Noye Mfg Co. Buffalo, N. Y., a double Stevens' roller mill.

Twelve additional pairs of Stevens' rolls for the Pacific Coast, have been telegraphed for to The Jno. T. Noye Mfg Co., of Buffalo, N. Y.

L. & G. N. Doolittle, of Birmingham, N. Y., have placed their order with Stilwell & Bierce Mfg. Co. for four pairs of Odell Rolls 9 x 18.

E. SCOLLER of North East, Pa., has ordered of The Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Rounds' sectional roller mill and other Stevens' rolls.

SHULER BROS. of Lyons, N. Y., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a pair of Stevens' rolls for grinding middlings

HENRY KALBFLEISCH & Co., St. Louis, Mo., have placed an order with The Jno. T. Noye Mfg Co. of Buffalo, N. Y., for a 9x18 double Stevens roller mill.

D. L. BRINKER & Co., Mt. Pleasant, Westmoreland Co., Pa. have placed an order with The Jno. T. Noye Mfg Co. of Buffalo, N. Y., for a Stevens roller mill.

BRUNER & REEDY, Toledo, Ia., has ordered of The Jno. T. Noye Mfg. Co., Buffalo, N. Y., a three-break Rounds' sectional roller mill, and a double Stevens' roller mill.

THOS. MOSES of Sharon, Pa., has discarded the use of stove plates for first reductions, and ordered two double Stevens' roller mills of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

THE Model Roller Mills, Minneapolis, Minn., owned by R. P. Russell & Co., burned April 17. Loss \$60,000. Insurance \$44,000. The mill had a capacity of 250 barrels per day.

The Stilwell & Bierce Mfg. Co. have just shipped 6 pairs of Odell rolls to Wm. Gardner, Gloucester, England. Mr. Gardner acts as their agent for Great Britain and the colonies.

To thoroughly satisfy Chas. Lounsbury of Oswego, N. Y., he must have seven pairs of Stevens' rolls, as furnished by the Jno. T. Noye Mfg. Co. of Buffalo, N. Y. He will soon be happy.

JNO. WEBSTER of Detroit, Mich., the popular millwright, has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for another double Stevens' roller mill, for Richardson & Evans, Indianapolis Ind.

CHAS. HUBER, of St. Louis, Mo., the milling expert, has planned the mill at Carlisle, Ill., for the Carlisle Milling Company, and has placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for eight double Stevens' roller mills.

THE CASE MFG. CO., Columbus, O., have been awarded the contract of Ailes & Co., Ann Arbor, Mich., for a line of breaks, rolls, purifiers, scalping chests, centrifugal reels, etc., for a full gradual reduction mill on the Case System.

THE energetic Neenah, Wis., representative of the Stevens' roller mills, E. W. Pride, has captured an order from Uhling Bros. of Afton, Rock Co., Wis., for a three-break Rounds' sectional roller mill, as well as a single mill for low grade.

SHULER & Co., the progressive mill builders of Minneapolis, Minn., have bagged an order from Jno. A. Cole, Rochester, Minn., for a complete and full line of Stevens' roller mills, as manufactured by The Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

MASSACHUSETTS occasionally comes in for a show in the roller boom. Otis Cole of Pittsfield has planted an order with the John T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill and four pairs of additional Stevens' rolls.

THE mill of Bundy Bros. at Angola, N. Y., will soon be changed "in the twinkling of an eye," to the roller system, under the directions of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y. A Rounds' sectional roller mill, with other Stevens' rolls will be employed.

A Rounds' sectional roller mill, with Stevens' rolls, will soon be placed in the mill of William Thistle at Parma Center, N. Y. Rolls for bran and low grade reduction will also be added. The Jno T. Noye Mfg. Co. of Buffalo, N. Y., will promptly fill the order.

MESSRS. WARDELL & HINCKLEY, of Chicago, Ill., lately placed an order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for a 14x36 Reynolds Corliss Engine, complete, for Messrs. Rath, McMahon & Co., manufacturers of cracker machinery, etc., Chicago, Ill.

LLOYD & BEVINS, Terrell, Texas, after thoroughly investigating all the roller systems, placed their order with the Case Mfg. Co., Columbus, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, &c., for a full gradual reduction mill on the Case System.

PERHAPS Jno. Webster of Detroit, Mich., thinks he hasn't a soft thing in Indiana. At any rate he has gobbled an order for six double Stevens' roller mills (a full line) for the firm of Emerson & Callender, Vincennes, Ind. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will fill the order.

The contract for remodeling the mill of Keppel & Co., Hamilton Miss., has been awarded to the Stilwell & Bierce Mfg. Co., of Dayton, O. They furnish a complete line of Odell rolls consisting of ten pairs of 9 x 18 rolls and all necessary machinery for a capacity in this mill of 125 barrels per day.

Taylor, Romeny & Armstrong, of Salt Lake City, Utah, have determined to let the Mormons and other inhabitants of that country see what can be done for them in the way of a Stevens' roller mill, and have placed an order with The Jno. T. Noye Mfg Co., of Buffalo, N. Y., for a four-break concentrated roller mill and three double mills.

MESSRS. EDW. P. ALLIS & CO., of the Reliance Works, Milwaukee, Wis., have completed the plans and are furnishing the machinery for rebuilding the mill of Messrs. Herr & Cessel, of Georgetown, D. C.; the mill, when completed, will contain forty-four pair of Allis' rolls in Gray's patent noiseless Belt Frames. The millwright work is being pushed forward rapidly, under the direction of Mr. J. H. Nye, one of Messrs. Allis & Co's. best foremen.

Odell rolls are to be placed in the mill of E. P. Smith of Union City, Ind.

I. F. Dull, Shanes Crossing, O., is putting in a 9 x 18 Odell roll for bran.

The Stilwell & Bierce Mfg. Co. have sold to J. Bierbauer, Mankato, Minn., four pairs of Odell rolls.

The Stilwell & Bierce Mfg. Co. are furnishing the Odell rolls for the mill of A. Bodendorfer, Cedarburgh, Wis.

E. Z. Waldron of Meyerstown, Pa., has placed his order with the Stilwell & Bierce Mfg. Co., for two pairs of Odell rolls.

The Lima Mill Co., of Lima, O., has ordered from the Stilwell & Bierce Mfg. Co., two pairs of Odell rolls for bran.

The Stilwell & Bierce Mfg., of Dayton, Ohio, have orders from the Richmond City Mill Works for two pairs 9 x 18 Odell rolls.

The Stilwell & Bierce Mfg. Co., have orders from Henderson & Supplee of Gulf Mills, Pa., for four pairs of Odell rolls.

Odell rolls have been ordered by R. M. Griffey & Co., of White Deer Mills, Pa. from the Stilwell & Bierce Mfg. Co., of Dayton, O.

Two pairs of Odell rolls have been ordered from the Stilwell & Bierce Mfg. Co., for the mill of G. Frick, Chillicothe, Ohio.

The Stilwell & Bierce Mfg. Co., have orders from Grey Flora, of Shuqualax, Miss., for a 20 inch "Eclipse" turbine wheel.

Messrs. Colton Bros., of Bellefontaine, O., have placed orders with the Stilwell & Bierce Mfg. Co. for one 9 x 24 Odell roller mill.

Stilwell & Bierce Mfg. Co., have received order from the Gratiot Mfg. Co. of Chicago, Ills. for eight pairs double roller mills.

Four pairs of Odell rolls have been ordered by Geo. House, Lockland, O., and other mill machinery from the Stilwell & Bierce Mfg. Co.

The Stilwell & Bierce Mfg. Co., have just shipped Amatutz & Co., of Amwell, Wayne Co., O., one double 9 x 24 roller mill for bran.

The Stilwell & Bierce Mfg. Co., have just shipped one thirty inch and one forty inch "Victor" wheels to James Wagner & Co., of San Francisco, Cal.

The Stilwell & Bierce Mfg. Co. have just received orders for Odell rolls from John M. Wagner, Millersville, Pa., also from L. B. Wamsley, Schuylkill, Chester Co., Pa.

The mill of Robinson & Co., Maysville, Ky., lately remodeled to the Odell system, will be started in the present week. This mill is expected to do very fine work.

The Stilwell & Bierce Mfg. Co. have secured the order of Geo. Brose, Evansville, Ind., for a complete roller mill on the Odell system, using ten pairs 9 x 24, four pairs 9 x 18 and two pairs 9 x 30 Odell rolls and all necessary machinery for a 200 bbl. mill.

Orders for the "Victor" turbine wheel have been sent by J. D. Edge, of Minneapolis, Minn.; H. W. Blake, Naples, N. Y., and S. Parsons, Auburn, Me., all to furnish power for flour mills.

The work on the Seiberling Bros. large mill at Akron, is progressing rapidly, the Odell rolls, which are being manufactured by the Stilwell & Bierce Mfg. Co., are to be shipped early in June.

The Stilwell & Bierce Mfg. Co., have the contract to remodel the mill of Geo. S. Mauser, Treichlers, Pa. using ten sets 9 x 18 rolls and all necessary machinery to make 125 bbls flour per day.

The Sebago Wood Board Co., of Portland, Me., have just ordered three more 25 in. "Victor" wheels for their large pulp works, this makes twenty-five "Victor" wheels which this company has now in operation.

The Stilwell & Bierce Mfg. Co. have the contract to remodel the mill of Johnston, Fogeler & Co., St. Elmo, Ills.; furnishing a complete line of the Odell roller mills and all necessary machinery for a capacity of 125 bbls. per day.

Eight pairs of Odell rolls are to be placed in the mill of the Middleport Flouring Co., Middleport, Ohio. This mill is to be remodeled to the roller system, the contract having been awarded to the Gratiot Mfg. Co. of Chicago, Ills.

The mill of A. Good of Williamsport, Pa., which has been under process of reconstruction to the Odell system has recently been started and is giving excellent satisfaction, the demand for the flour exceeding the capacity of the mill.

The contract for remodeling the mill of R. B. Kline of Leipsic, O., has been taken by the Stilwell & Bierce Mfg. Co. of Dayton, O., who furnishes nine pairs Odell rolls, this mill is to produce 75 barrels of flour per day when completed.

The Stilwell & Bierce Mfg. Co., have the contract to remodel the mill of J. H. Hermance of Coopersville, Mich. to a complete roller mill on the Odell system. A four break concentrated mill will be used, and also the Odell double roller mills.

Eberhart & Bros., of Newport, Pa., have just started up their mill and are very much pleased with it. They are producing a very high grade of flour which is in great demand. This mill was remodeled by the Stilwell & Bierce Mfg. Co. of Dayton, Ohio.

Orders have been placed with the Stilwell & Bierce Mfg. Co., of Dayton, Ohio, for ten pairs of Odell 9 x 18 rolls and two pairs of 9 x 24 Odell rolls for the mill of Vance & Parrott, Pierce City, Mo. The order was placed by the Richmond City Mill Works, who have the contract for building the mill.

MESSRS. CARNEGIE BROS. & Co., of Pittsburgh, Pa., have ordered of Mrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., a pair of blowing engines for their new plant at the Edgar Thompson Steel Works. This pair of blowing engines is similar in design to those

already constructed by Messrs. Allis & Co. for the Joliet Steel Co., Joliet, Ill. The steam cylinders are 56 inch diameter and 54 inch stroke, and the air cylinders 54 inch diameter and 54 inch stroke.

MESSRS. J. H. TOWNSEND & Co., of Stillwater, Minn., have ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., a 20x48 Reynolds Corliss Engine, condensing. This engine is to take the place of a 14x36 Reynolds Corliss Engine, in order to furnish additional power to increase capacity of the mill.

The hearts of Jno. Strong & Son of Rockwood, Mich., will soon be gladdened by the introduction into their mill of six double and one single Stevens' roller mill, all to be supplied by the sole manufacturers, The Jno. T. Noye Mfg. Co. of Buffalo, N. Y. Jno. Webster of Detroit, Mich., will make the plans and superintend the work.

MESSRS. MANDEL BROS., of Chicago, Ill., have lately placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for a 16x42 Reynolds Corliss Engine, complete, to drive an electric light plant and pneumatic cash tubes in their large wholesale and retail dry goods store. The order was secured through Messrs. Wardell & Hinckley, the Chicago agents for the Reynolds Corliss.

C. C. Grove, Williamsville, N. Y., has for a long time had an anxious eye on the milling business, and finally has concluded to erect at Tonawanda, N. Y., a complete roller mill; he has therefore placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a full line of Stevens' roller mills for the purpose. Tonawanda has long felt the need of a flour mill, and Mr. Grove is to be congratulated on his business enterprise.

We notice in the *Indiana Progress* published in Indiana, Pa., an interesting descriptive article of the Penn mills which have recently been remodeled and which has now been running about two weeks, it says: "The Penn mills now are an excellent example of the modern American mill built after new ideas with no old faults to which modern machinery and processes had to be conformed. Such a mill not only marks the energy and enterprise of Messrs. Ellis & Sons, but still more our progressive and scientific milling. The building is now 50 x 50 ft, five stories high including basement, the boiler house is 15 x 50 ft, built of brick, and contains two large double flue boilers. The engine room adjoining contains a 12 x 48 engine which supplies power for all the machinery. This floor also contains all the heavy pit gearing, counter shafts for rolls, elevator boots, etc. The pit gearing was furnished by Poole & Hunt of Baltimore, is very accurate in pitch and noiseless in operation. The second or ground floor contains ten pairs of Odell roller mills built by the Stilwell & Bierce Mfg. Co. of Dayton, Ohio, (a cut of which we present on front page), also a Silver Creek flour packer built by Howes, Babcock & Ewell of Silver Creek, N. Y. The third floor is taken up with stock hoppers, a three reel bolting chest, gearing conveyors, and a pair of hopper scales of the Howe make. The fourth floor contains four of the Geo. T. Smith and one Garden City purifier, an eight reel scalping chest which is a model of

beauty and convenience, built of clear pine and cherry alternately, and is provided with double conveyors and speck boxes throughout, also grading reel and grading machinery which consists of a Barnard & Leas separator, Eureka smut and separator and a Eureka brush machine, on this floor are also one of Stevens, Hughes & Co's bran dusters. On the fifth floor is a four reel bolting chest, a two reel bolting chest and two reel scalping chest, heads of elevators, conveyors, gearing, etc. Every floor of the mill is lighted by gas. The principal part of the shafting and gearing was furnished by the Christiana Machine Co. of Christiana, Pa., and Major I. McFarland of Indiana, Pa. The milling diagram was made by U. H. Odell of the Stilwell & Bierce Mfg. Co., of Dayton, Ohio, builder of several of the largest roller mills in the country, notably among which is the Washburn A. mills of Minneapolis, Minn. The millwright work was under the supervision of Joseph Clingenberger and W. H. Gamble, two most excellent millwrights. The assistants on the job were John Gamble, Jas. Gamble, J. B. Work, and Wm. Kennedy. The machinery is all of the best and latest, neither owners nor workmen spared pains to make the mill first-class in every respect. The capacity was first rated at 125 bbls. per 24 hours, but since starting up find plenty of power and capacity for 150 bbls. The flour enjoys an excellent reputation and finds ready sale in any market wherever offered."

WISCONSIN CENTRAL LINE

3 TRAINS EACH WAY DAILY

BETWEEN
MILWAUKEE, FOND DU LAC, OSHKOSH,
NEENAH and MENASHA.

PARLOR CARS!

through from Chicago via Milwaukee without change, on Day Trains.

New & Elegant Sleepers from Chicago to Stevens Point on Train leaving Chicago via C. & M. St. P. R'y Co., at 9 P. M.

Also a Superb Sleeper from Milwaukee to Neenah attached to the same train, leaving Milwaukee at midnight.

N. B.—This Sleeper will be ready for passengers at Reed Street Depot, Milwaukee, at 9:00 o'clock P. M.

2 TRAINS EACH WAY DAILY

BETWEEN
MILWAUKEE and EAU CLAIRE.

1 A DAILY TRAIN TO
Ashland, Lake Superior.

NO CHANGE OF CARS

From Milwaukee to Stevens Point,
Chippewa Falls, Eau Claire or
Ashland, Lake Superior.

These superior facilities make this the BEST ROUTE for GRAND RAPIDS, WAUSAU, MERRILL and all points in CENTRAL WISCONSIN.

F. N. FINNEY. JAS. BARKER,
Gen'l Manager, Milwaukee. Gen'l Pass. Agent, Mil.

The Livingston Belted Roller Mill

WITH EITHER OUR

PAT. NON-CUTTING OR SHARP CORRUGATIONS.

THIS MILL

is the Outgrowth of over 4 Years' Experience with Roller Mills; is Neat, Strong and Durable; has no Delicate Parts to get out of order; has More and Better Adjustments than Any Other Roller Mill in Market.

We have Secured a Patent for Non-Cutting Corrugations which make a Large Percentage of Middlings and Broad Bran.

MILLS GUARANTEED TO GIVE THE BEST OF SATISFACTION.

FOR CIRCULARS AND PARTICULARS ADDRESS

STOUT, MILLS & TEMPLE, MANUFACTURERS, DAYTON, OHIO.

PRAY MFG. CO., Minneapolis, Minn.

[Mention the UNITED STATES MILLER when you write to us.]

SOLE AGENTS for Minnesota, Dakota and North Wisconsin.

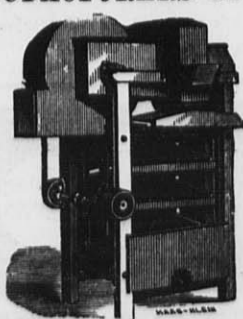
HOWES, BABCOCK & EWELL,

Established 1856.

Silver Creek. Chautauqua County, New York, U. S. A.

Established 1856.

MANUFACTURERS OF THE WORLD-RENOWNED EUREKA GRAIN CLEANING MACHINERY AND SPECIALTIES HEREWITH ILLUSTRATED



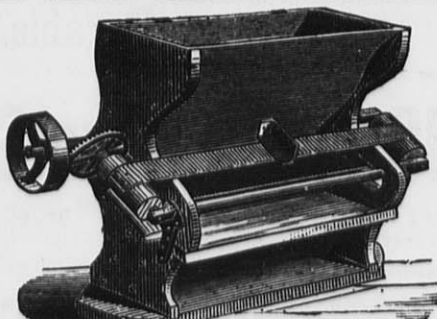
The Eureka Separator

occupies but little space, does its work in an effectual manner. Is also built for use in Elevators and Warehouses, with a capacity of from 100 to 1,000 bushels per hour.



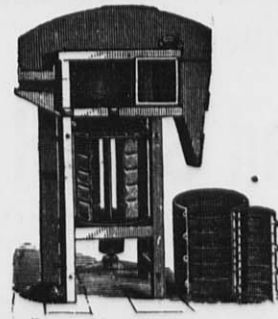
The Eureka Smut and Separating Machine.

A combined Smut and Separating Machine, having thorough ventilation. Over 14,000 of these Machines are now in use.

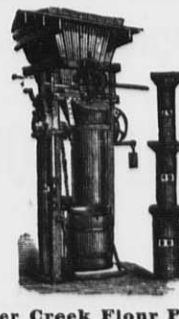


Eureka Magnetic Automatic Separator.

Removes all metallic particles from a flowing stream of grain, requiring no attention from the miller. 5 sizes.



Eureka Brush Finishing Machine. Recognized as the leading one of this class of machines. Universally recommended for finishing the process of cleaning.



Silver Creek Flour Packer.

Will pack whole and half barrels, and half quarter, eighth and sixteenth barrel sacks. Provided with labor-saving patent creveling steel coil spring, regulating the packing to perfection.

GENUINE DUFOUR AND ANCHOR BRAND BOLTING CLOTHS,

Office and Warehouse in England, 16 MARK LANE, LONDON, E. C.

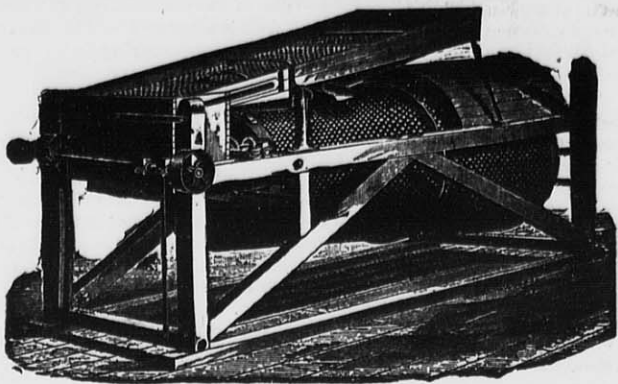
FULL STOCK ALWAYS ON HAND. MADE UP BY THE AID OF OUR OWN PATENTED ATTACHMENTS, IN A SUPERIOR MANNER.

Gen. Agency for Australian Colonies and New Zealand, THOS. TYSON, MELBOURNE, VICTORIA.

[Please mention the UNITED STATES MILLER when you write to us.]

COCKLE SEPARATOR MANUFACTURING COMPANY, MILWAUKEE

GENERAL MILL FURNISHERS



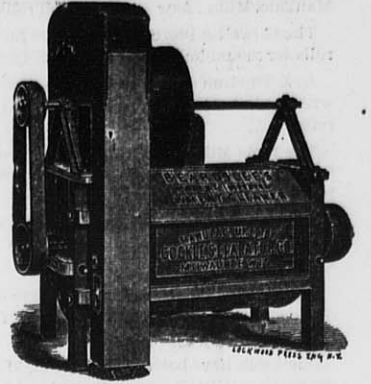
PLAIN COCKLE MACHINE.

AND MANUFACTURERS OF IMPROVED COCKLE SEPARATORS

(Kurth's Patent.) Also built in combination with

Richardson's Dustless Wheat Separators!

Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER.



BEARDSLEE'S WHEAT CLEANER.

Perforated Zinc at Bottom Figures.

Send for Illustrated Catalogue.

WE GUARANTEE GREAT CAPACITY combined with GOOD QUALITY OF WORK. Any common Sieve will separate the cockle from wheat, but to separate it WITHOUT WASTE is the GREATEST FEATURE of our Machine. A WASTEFUL machine is a DAILY LOSS OF MONEY in a mill. There is NO MACHINE IN THE MARKET which can stand comparison with ours.

Carbondale, Ill., Dec. 2, 1881.
Cockle Separator Mfg. Co., Milwaukee.

Gentlemen:—Replying to your late favor, would say that we can cheerfully recommend your Cockle Separator as doing all that you claim for it. We have tested ours thoroughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its good work.

Yours respectfully,

BROWN & WINFREY.

Perrysville, Ind., Nov. 24, 1881.
Cockle Separator Mfg. Co., Milwaukee.

Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.

Yours respectfully,

B. O. CARPENTER.

Hixton, Jackson Co., Wis., Dec. 30, '81
Cockle Separator Mfg. Co., Milwaukee.

Gents:—In answer to your inquiry of the 28th inst., I would say that the combined machine I bought of you last summer, works to my entire satisfaction. Respectfully yours,

W. T. PRICE,

per D. G. THOMAS.

P. S.—I have been milling now for twenty-seven years, but never have I seen anything that will equal yours in cleaning wheat.

As an Oat Separator it is No. 1, and for Cockle it cannot be beat. I can take screenings and separate the cockle from it without wasting any of the small wheat. In my opinion every mill in the United States ought to have one, and if I were to build a mill I would have no other. I remain

Yours, etc.

D. G. THOMAS.

Minneapolis, Minn. Aug. 22, 1881.
Cockle Separator Mfg. Co.:

We have been using two of Beardslee's wheat cleaners, a scourer and finisher, for nearly two years, and are passing one hundred and fifty bushels per hour through them, one third more than rated capacity, and are not using any other cleaners, and consider our wheat as well cleaned as any in Minneapolis.

Yours truly,

CAHILL, FLETCHER & CO.

La Crosse, Wis., July 30, 1881.

Cockle Separator Mfg. Co., Milwaukee.

Gentlemen:—The Beardslee Grain Cleaner sent me about the middle of June has been in operation since that

time with very satisfactory results. We cannot see that it breaks the wheat or requires an unusual amount of power to run it.

Yours truly,

WILLIAM LISTMAN.

Milwaukee, Wis., Aug. 23, 1881.

Cockle Separator Mfg. Co.

Gentlemen:—The Beardslee's Grain Cleaners which we have purchased from you for our New Era and Milwaukee Mills give us the best of satisfaction. Experienced millers having seen the work done by the machine agree with us, that it cannot be beat. You are at liberty to use our names as a reference, and to any party calling on us we will be pleased to show the machine in operation.

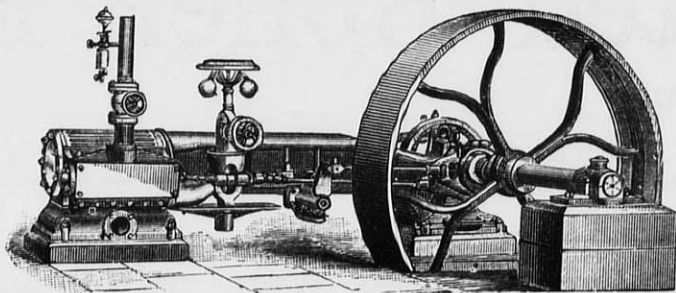
Yours truly,

NEW ERA MILLING CO.

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Steam Engines, Tubular Boilers.

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Thankful for past favors, and wishing my Milling friends a happy and prosperous year.

I am very respectfully,

C. F. MILLER.

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Every purchaser or owner of a Geo. T. Smith Purifier, in the past or future owns the right to use it unmolested and unchallenged, and in this right we have, can and shall protect them.

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